

# THIRTEENTH REPORT

(Fifth Biennial,)

OF THE

PROPERTY OF THE  
PRUDENTIAL INS. CO.

## State Board of Health

AND

VITAL STATISTICS,

OF

MINNESOTA, 1889-90,

CONTAINING

REPORT OF THE SECRETARY TO THE BOARD.

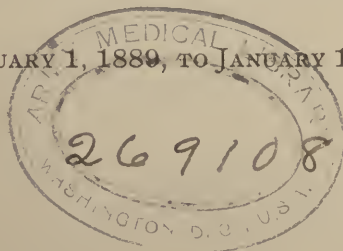
WITH APPENDIX.

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### PUBLIC HEALTH IN MINNESOTA,

[The Monthly Official Publication of the Board.]

FROM JANUARY 1, 1889, TO JANUARY 1, 1891.



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STATE BOARD OF HEALTH AND VITAL STATISTICS OF MINNESOTA, }  
OFFICE OF THE SECRETARY, February 1, 1891. }

*To His Excellency, W. R. Merriam, Governor:*

SIR:—I have the honor to transmit herewith the Report of the State Board of Health and Vital Statistics for the period of two years, from December 31, 1888, to January 1, 1891. It includes:

- I. The Report of the Secretary and the Appendix thereto.
- II. Two Volumes of PUBLIC HEALTH IN MINNESOTA, the official publication of the Board.

The report on Vital Statistics for 1888-1889, with a general statement of the data for 1890, has been in the hands of the State printers since December. It is now being printed and will be published as soon as the work is done.

Very Respectfully, Your Obedient Servant,

CHARLES N. HEWITT,

*Secretary and Executive Officer.*

# MEMBERS OF THE STATE BOARD OF HEALTH AND VITAL STATISTICS.

FRANKLIN STAPLES, M. D., President,	-	-	-	-	Winona
CHAS. N. HEWITT, M. D., Secretary and Executive Officer,	-				Red Wing
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J. H. PHILLIPS, M. D.,	-	-	-	-	Preston

All official correspondence should be addressed to the Secretary, the executive Officer of the Board.

## SECRETARY'S REPORT.\*

*To the State Board of Health and Vital Statistics of Minnesota:*

I HAVE the honor to submit my Eighteenth Annual Report with accompanying papers. It deals particularly with the work of the years 1889 and 1890. The business of my office is conducted so that the official year closes December 31, because the returns of infectious disease and of Vital Statistics are calculated from that date. These returns are not all in my hands before the first of February so that my report, to be any way complete, must accommodate itself to these conditions.

I have included a brief review of your work since organization (1872) which will enable you, and any others who read this paper, to form a better judgment of what you have done, its value to the State, and what are the needs of the future. It must be always borne in mind that, in Minnesota, the work of the State Board of Health is the same, in its field, as that of the Local Board of the smallest township. Both are members of the sanitary service of the State which is a unit in organization and duty. To report the doings of the State Board is, therefore, to record its daily co-operation with local efforts to prevent, or control disease, or in the doing some other sanitary work. This was true to some extent from the beginning, but since the legislation of 1885-87 it has been so much the rule that to understand the work of the State Board there must be constant reference to that of the Local Boards.

This Board was organized on petition of the State Medical Society, in 1872. But two other States preceded Minnesota in forming State Boards of Health—Massachusetts, in 1869; California, in 1870. Our legislature wisely adopted the Massachusetts law to afford the fullest scope for the work of the future. That act is a fair statement of what seemed then, the probable field for sanitary effort; it was a forecast, not an inflexible statute; its provisions were broad, general, tentative; it avoided detailed regulation, and while giving large executive powers made no provision for their exercise. With little precedent to guide, and little authority to enforce what was needful to be done, you began to lay the foundations upon which stands the organization to-day.

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\* For index to report and appendix see page 25.



The first trial was with infectious disease, and began immediately in an epidemic of small pox. During 1872 there were probably more than 1,000 cases of the disease and there were reported 250 deaths. There were but two Local Boards active enough for efficient work, St. Paul and Minneapolis, and we found that without local organization thorough work was impossible. Your secretary kept up a vigorous search for the disease, and where found, joined the local authorities in the proper means for its suppression, but these cases were few. The real work was done by medical men who at great disadvantage, were able, finally, to stem the disease by vaccination, but after great loss of life. We had no trouble in securing from the legislature in 1873 a law for the organization of city and village Boards of Health, responsible to the State Board for the management of infectious diseases. When organized they rarely acted except on that account and it was soon evident that unless these boards had a regular, every day, duty they would be rarely ready, even for emergencies. The legislature of 1881 attached a penalty to the law of 1873 and made the same applicable to township Boards as well, so that an increased efficiency began from that time. Further trial showed the need of a codification of the scattered legislation of years, and in 1883 your secretary, with skilled legal advice, prepared the act which you urged on the legislature, and which (as chapter 132, laws 1883,) is the real charter of the Minnesota Sanitary Service, consolidating State and Local Boards into a common organization for the suppression, or control, of infectious diseases of men. Two years more and another extension and definition of the power and duties of Boards of Health became necessary, and the same responsibility for infectious diseases of domestic animals was imposed on them, with the control of offensive trades and employments. In 1887 the collection and collation of the Vital Statistics was made the duty of Boards of Health, as directly concerned with the cause and occurrence, of disease. The bill received the endorsement of the governor, and of prominent men familiar with the facts. The attached graphic charts, important guides to the whereabouts and operation of the leading causes of death and ill-health at work on our population, were impossible before that law was enacted. So much for legislation, now what is the record of work done by this and Local Boards?

My answer here must be brief, chiefly statistical, and is best given under the classification used in the service.

*Organization:* There are, in Minnesota, 31 cities, 199 villages and boroughs, and 1,307 townships. To-day, through your constant effort, every city, village and borough, and all but three townships, have organized Boards of Health, supplied with the information and machinery for work, in direct, and responsible relationship with this Board, and with each other. If nothing more had been accomplished than to have completed this organization of over 5,000 men, under definite legal responsibilities, and distributed in every community in the State, ready for offensive, or defensive, work against infectious disease, and able to act alone or together, as necessity demand, its value would have been very great, but it has done more than that. It has been the means of diffusing, in a steady and uninterrupted flow, a practical knowledge of the objects and means of sanitary work, and to illustrate its teaching by constant demonstration of actual results in the saving of human life. Before

this organization, nearly 1,000,000 of the population served by the township Boards of Health, and this Board, had no sanitary protection worth the name. Now they have all the essential security of the largest city, and in some respects more. Referring to the charts already quoted, PUBLIC HEALTH IN MINNESOTA attached, and the report on Vital Statistics, I submit here some of the evidence of the work done by Boards of Health in controlling preventable diseases most fatal to human life.

*Typhoid Fever:* Since 1886 its annual mortality has been as follows: In 1887, 717 deaths; in 1888, 643 deaths; in 1889, 572 deaths, and in 1890, 388 deaths. Comparing the great increase of population, during those years, with the steady decrease of mortality, during the same time, it is evident that there was a saving of hundreds of youthful lives, and of thousands of cases of sickness, from typhoid fever. The essential act for its prevention is to disinfect the discharges from the sick. This you have so persistently urged, for years, that it is now the rule, and with better sanitary provision for the care and disposal of offensive matters, is largely responsible for this encouraging result.

*Diphtheria:* The effort to control this scourge of childhood began in 1873, but we met with medical and popular disbelief of its infectiousness, and the persistent virulence of its specific poison. Meanwhile its mortality increased to the enormous proportion of 1,607 in 1882. Then opinion came to your support and sustained your demand for the co-operation of the Local Boards of Health. We have steadily increased the efficiency of the fight and are gaining, but against great obstacles. The mortality for 1887, 1888, 1889, 1890, was respectively, 788, 866, 889, 747. Increase in population taken into account, there has been a constant reduction, and for 1890 the gain is far in advance of any previous year. *It is the mortality in large families, living in small and crowded houses which has not been reduced.* If we could isolate the well children, in another place immediately on the occurrence of the first case, making the house a hospital and enabling the mother to devote her time to the sick, while removing the other children from the infection, a large proportion of the mortality in such families would be prevented. I hope to see some provision for this most important measure in country districts. Neighbors having none, or grown up, children, have repeatedly demonstrated the value of this simple measure in saving life, and preventing the extension of the disease in families. Such refuges would cost little, could be so built as to be easily cleaned and disinfected, could be furnished, for the use of healthy children at little expense, as the care and food would be, as a rule, provided by the affected family. It will be a long time before hospitals for infectious diseases can be provided, or used if supplied, but this simple, inexpensive and efficient measure would, in lieu of a better, save much suffering, and many lives. Isolation of the sick, with the most rigorous disinfection of persons and things, during sickness and for some time after apparent recovery, are absolutely essential in dealing with diphtheria. Another important need is competent nurses for the sick. The false belief that persons over 25 years of age are likely to take the infection makes the duty appear dangerous, when the fact is, that with ordinary precautions, the personal danger to such persons is small.

*Croup:* The graphic chart, illustrating four years' study of this puzzling disease, throws some light on its relations with diphtheria, and appears to

indicate differences. There is still abundant reason to insist, as you do, that when diphtheria prevails croup should be treated as diphtheria, by isolation and disinfection, for the neglect to do so has frequently shown their identity.

*Scarlet Fever:* Has not, for several years, figured largely as a cause of mortality, averaging not more than 2% of deaths from all causes. It is ordered carefully isolated, to provide against its sudden outbreak into epidemic prevalence, likely at any time to occur. Mortality in 1890, 165.

*Measles:* Is more frequently isolated than before, and with, apparently, good results, anyway the seclusion has secured the children from the exposure to cold and from sequelæ, which have largely to do with its mortality, and unfavorable influence on health. Its average of mortality for four years has been less than 1.50% of all deaths. In 1890 it was 83.

*Pneumonia:* Deserves more attention than it receives from the profession. It is more and more being recognized as, sometimes at least, an infectious disease. As you have not so classed it, we have no means of studying its peculiarities as we would have if so treated. The mortality averaged (3 years, 1887-89) more than 5.50%, and early in 1890 took a high range, coincident with epidemic influenza, causing 910 deaths in that year.

The important facts afforded by the Vital Statistics, which I have corrected for this, as for other disease, by correspondence with attending physicians, have been arranged in detail, and will be found in the report on Vital Statistics, and in every issue of PUBLIC HEALTH, of which the numbers for 1889-90 are appended to this report.

*Infectious Diseases of Domestic Animals:* In 1884 this Board became aware of the existence of glanders in many localities, endangering human life everywhere, and decimating horses in some places. Pleuro-pneumonia threatened to come west; other diseases of animals were reported and no other means of dealing with the whole subject was so easy and natural as to assign it to Boards of Health. That was done (Chapter 200, laws of 1885), and as soon as the necessary details could be prepared in your office, the attack on glanders began. Within eight months 232 suspected horses had been isolated in 76 localities, and 31 counties, and some of the ways in which this wide distribution had been caused were discovered, and stopped. Three men are known to have died of the disease, and probably more. This fight has been carried on largely by the country Boards, with the assistance of this Board, and has included a constant warfare with unscrupulous dealers, and with attempts at importation from other States and Territories. The attached special report brings the account up to January 1, 1891, and is so arranged as to give nearly all the facts in your possession. All the correspondence from the beginning is carefully filed for reference, and covers every detail of the work. A more successful effort against an infectious disease of animals has never been made. The disease is reduced to isolated outbreaks, which require, as much as ever, prompt and vigorous control, but the means are, now, known to every Local Board, and there is no longer any excuse for failure. Since March, 1885, there have been reported to your secretary more than 500 outbreaks of disease among domestic animals. More than 50 during 1890 and in every case full instructions were immediately sent, and competent veterinary assistance furnished, when not provided by the Local Boards,

*Malignant Catarrh:* This serious disease of cattle has been found to be very fatal in some parts of the State. The measures devised for its control, (with the assistance of Prof. Law, of Cornell University, sent here by the government at my request) have proven very successful, and only an occasional outbreak is now reported.

*Pleuro-Pneumonia* of cattle threatened this, and all other western States, in 1886, from Chicago. I went there, and by the courtesy of the National and State authorities, became acquainted with the disease, and the probabilities of its limitation to that city. We had then more than 1,000 Local Boards of Health, and abundant authority to deal with the pest, and selected to attack it before it reached our borders. Rigid evidence of at least 90 days' freedom from possible exposure to the disease was demanded and enforced, for all cattle coming into the State, and given for all going out. All arrivals were put under the observation of the Local Boards of Health for at least 30 days' more. As a result not a case came to, or developed in, the State, though adjoining States and Territories were invaded. In December, 1886, a large conference of cattle growers met at the capitol with this Board, and after strict investigation of your methods cordially and unanimously resolved, on motion of J. J. Hill, "that the work of the State Board for the last year, for the health of the citizens of the State, and for the preservation of the cattle interests of the farmers of the State deserves the fullest commendation of every citizen." There has been, since then, a constant gain in knowledge what to do, and how to do, for the good of domestic animals, and the most important lesson has been that proper quarters, food and water-supply are powerful agents against, supposed, infectious disease, they having repeatedly disappeared by the use of these measures, enforced by the Local Board of Health. The vague and demoralizing fear that all fatal disease of animals is infectious, is being replaced by a belief, founded on experience, that the large majority of animal diseases are not so, and that all which are now known in Minnesota are amenable to easy sanitary control, provided they be dealt with as required by law.

Any one who wishes to examine the details of the work of the Local Boards, or of this Board, will find the opportunity in the file of PUBLIC HEALTH IN MINNESOTA, attached to this report, where are numerous reports, inquiries, and statements by chairmen, and replies by the secretary, or by men peculiarly fitted to advise in special directions, with much other matter directly related to the subject.

*Obligatory notification of infectious diseases of men and domestic animals* has been the law since 1885 and 1887 respectively, and is the sheet-anchor of Boards of Health in their management. It has had a severe trial under varying conditions in this state, where it has proved of inestimable value. Because of it I have received official notice, up to 1890, of the first case, of more than 900 different outbreaks of diphtheria; of over 350 outbreaks of scarlet fever, and 25 invasions of smallpox, since March, 1885. In 1890, 137 outbreaks of diphtheria and more than 80 of scarlatina. The use of this obligatory notification for infectious diseases of animals, has been considerably more than 500 since March 1887, and nearly 50 in 1890. Many of the first notices are sent by telegraph when there is occasion for haste, and first suggestions from your office are often sent in the same way. Nothing has done so much



to prevent the frequent panic (which the sudden discovery of dangerous infectious disease in a community, but a few years ago, generally occasioned) than the knowledge that your help is always available, in the speediest and most useful way. Only recently you have, with Local Boards of Health, directly concerned, dealt with outbreaks of threatening proportions, in a quiet and matter-of-fact way, with no excitement, and therefore, with much better prospect of success. The change in this respect comes too, from the knowledge that it is now impossible for a serious infectious disease of men or animals to make invasion of this state without speedy detection and prompt efforts, local and state, for its suppression, or control. Much credit is due to our professional brethren, who have, as a rule, heartily cooperated with you in making notification the great assistance it has proved to be in the constant effort we are making to cope with disease. It is proper that I should call particular attention to the hearty and efficient service done, in this direction, by so many of the chairmen, and members of the township Boards of Health. Not familiar with the work, except as they have learned of you, and from experience, you will find in PUBLIC HEALTH IN MINNESOTA (appendix), abundant evidence that they are becoming more familiar, and interested in their sanitary duties. A large proportion are re-elected yearly, among those who have been most efficient, so that the experience each Board gains is not wholly lost to the service, but goes into the common fund of the district, as leaven to stimulate others to get and use the same knowledge.

Next in importance, of the machinery of the Public Health Service for the detection, and knowledge of the causes of death among the people of the state, comes, beyond dispute, THE VITAL STATISTICS. The object in view in collecting these returns of births and deaths may be summarized as follows:

First: To afford legal evidence of birth, and of the time, place, cause and date of death, with the sex, age, and social condition of the individual.

Second: For general statistical purposes, to estimate the increase of population as affected by births and deaths, "natural increase": to show the relation of nativity, parent-nativity, sex, age, condition, to deaths; to estimate "expectation of life," and to aid the solution of other social and business questions.

Third: For sanitary purposes, to know the number of births and deaths with their relation to population, to define the character, season, distribution and other peculiarities of individual diseases, or groups of diseases; their relations to persons as affected by age, sex, condition, nativity, parent-nativity, season and other circumstances; to discover the infectious, endemic, epidemic, or other character of individual disease, and to aid in the solution of other sanitary and medical questions, to which they are directly related, and for which they are the most important aid that we have. Correctly obtained, and properly arranged into statistical tables, graphic charts, or other suitable forms, these returns of births and deaths are the most reliable evidence at our disposal of the necessity for, and direction of, efforts to prevent, or control disease, in the interest of health and normal life for the whole state. They are the index of the great facts of sickness, disease and death, with which Boards of Health have every day to deal. Their character

demands that their collection, classification and interpretation, should be the duty of physicians, who are alone fitted by education and familiarity, to deal with them. It is further evident that the value of the vital statistics for any of the above mentioned, or other legitimate use, will depend upon the *accuracy, completeness and frequency*, with which they are collected arranged and published for study, and reference. The method in use before 1887 failed in every one of these respects. There was no medical supervision from the collection to the publication; there was gross inaccuracy in the statement of cause of death, for lack of such supervision, and the returns were not published, or available for reference for more than a year. At the request of the Commissioner, I edited the Vital Statistics for three years, when every effort was made to correct some of these defects, but they could only be remedied by change of method. For sanitary purposes one most serious difficulty was, that the information the statistics could give, as to the presence, character and mortality of infectious, or other preventible disease, came too late to be of any use for its control. The absence of these important helps in the every day work of Boards of Health was so serious a loss that the Governor endorsed your request for the transfer of the Vital Statistics to your charge, which was done by the Legislature in 1887, Chapter 114, of the laws of that year. The returns of births and deaths are now made monthly by the Health Officers of villages, boroughs and cities (except St. Paul and Minneapolis) and by the township clerks and the clerks of the cities named. They are sent to your office, where after careful revision, and correction by correspondence, they are immediately published, in provisional form, and distributed to every Board of Health and Township Clerk in the state. The single item of cause of death, for example, involved a correspondence with physicians, of 919 letters of inquiry, in 1890, and their replies made important changes in the original returns. The errors found were due, mostly, to careless transcribing, to taking other evidence than the physician's, when there was one, and to ignorance of technical terms unavoidable in naming disease. But the greatest immediate value of monthly returns of deaths, and causes of deaths, is that *they give an immediate clue to the whereabouts and character of infectious diseases*, and if not already known, and attended to, a notification is immediately served on the Health Officer, or the chairman of the township board, with request for prompt information as to the measures which have been taken to control the infection. In this way many outbreaks are discovered, some unknown to the Local Board where they occur, who receive, at times, their first notice from your office. The effect has been that there is an increasing watchfulness and efficiency, and fewer outbreaks of disease escape discovery, with prompt isolation and care for the sick. These returns enable us to keep constant tally of all forms of sickness, their respective mortality, distribution with relation to season, and to the age, sex, etc., of the sick. Large diagrams are used for the purpose of this record in your office, corrected each month, and they serve as evidence of the success of the work of the service. The graphic charts, which accompany this report, are copies of some of them. It will be understood, that the tracing of 1890 is provisional, and to be revised when the last corrections are made. As this is the census year, a comparison of the returns of births and

deaths to population will be made as soon as the census returns are received. I am satisfied that not all of the births, but most of the deaths are reported. The success of the collection, both of births and deaths, is equal to the best, and much greater than the average, of other States. I know that there is increasing accuracy in all the returns, and that their value is greater than ever before, for they are constantly tested in the daily work of the office, being constantly referred to while dealing with infectious disease, and in the study of other disease, also.

*Conferences of State and Local Boards* are of increasing frequency. The usual motive is the presence of infectious disease in several adjacent localities. The Local Boards are represented by their Health Officer or Chairman, and the State Board by the secretary, or other member, and sometimes, to save time, by a Health Officer, who is familiar with the particular disease, and lives outside the infected district. Six meetings have been held within the last four months to devise plans for controlling diphtheria, and the value of the method is beyond dispute, so that Local Boards and Health Officers frequently ask for it. In all cases of doubt, or difficulty, appeal is taken to this office, and your suggestions have in the course of years, gradually established a common use, whereby the confusion of conflicting counsels, so fatal to work of this kind, is largely avoided. A very large and varied correspondence has, in the way indicated, grown up between more than 1,500 Local Boards and the secretary, involving a great variety of sanitary questions, the preparation and use of blanks, circulars of instruction, the examination of samples of water and food, suspected for various reasons; inquiry as to infectious diseases of men and animals; and then there is correspondence with a large number of men distinguished in various departments of our common work, asking their counsel, and a large circle of current literature to be run over for the most recent additions, to our knowledge, of practical sanitary methods. These have compelled the gradual accumulation of a considerable library, and the formation of sufficient laboratories for our present work. In 1885 it was apparent that great relief could be obtained to the current correspondence with Local Boards, if we had a little monthly journal, for regular distribution to every Board. I proposed such a paper to be called PUBLIC HEALTH IN MINNESOTA, and by your order its publication began in March, 1885, and has continued regularly since. It began with 2,000 copies and now prints 3,700 copies at less expense than could be provided in any other way. (See file for 1889-90, supplement to this report.) Your example has been followed by nearly every other State Board of Health in the United States, so evident is the need for, and utility of, such a publication. The numbers for 1889-1890, in appendix to this report, are the best evidence to offer. Among the regular reports are those showing number of cases and other details of infectious diseases of men and animals, made up from notifications received in previous month: The distribution and mortality of specified diseases of men for the same period, derived from the Vital Statistics: Meteorological Report, for same period, published for the Minnesota Weather Service. Attention is called every month in the editorial department to any danger impending, and to any other subject which seems to require attention, as also under the heads

of Diseases of Men, Diseases of Domestic Animals, Vital Statistics, Health of Children in School, Laboratory, and Miscellaneous Matters. It is a great help in the routine work of my office, and is a permanent record of many reports of Health Officers, and Chairmen, notable local sanitary news, inspection reports, and other matter of local value which are useful to other Boards and could have such publicity in no other way.

- Out of the work of the office some important incidental questions have arisen and among them the most important is, protection against small-pox. The outbreaks of this disease since 1885 have been twenty-five in number, but easily controlled by our present organization. It is now reported in Iowa, and has come into New York harbor recently. It has come to us oftenest by immigrants, through that harbor and up the St. Lawrence. I have written to the physicians in charge, and established every safeguard, which our long experience suggests against its coming.

To test the question of vaccination, circulars were sent out to a number of Health Officers and principals of schools, asking for statistics on the blanks submitted. Returns have been received from over 14,000 pupils, which, I have every reason to think, give a fair average for the State. They give the following totals and averages, which are made up from all the returns as yet received, and include the record of 14,416 pupils in the Normal schools of the State, and in the public schools of 24 villages and cities. Of this number, 8,015, or 68% gave no evidence (knowledge of the operation, or a cicatrix) of vaccination; 556 knew they had been vaccinated but no cicatrix was found; 228 had been vaccinated and exhibited a doubtful cicatrix; 1,740 had a well-marked cicatrix; 413 had two well-marked cicatrices; 141 had three well-marked cicatrices; 393 had four or more cicatrices. In 2,581 cases the form of the virus used was not known; in 271 cases humanized virus had been used; in 786 cases animal virus was used. These data indicate a neglect of the practice, which ought to receive immediate attention. When this subject came up in the last meeting of the Board (October, 1890) I was instructed to establish an experimental station for the production of vaccine from the calf. And this was done to enable you to supply vaccine, which should be of known origin, produced under the strictest conditions, and tested by the best known methods before issue. The experiments are far enough advanced to show that such a virus can be produced, and at moderate expense, if the supply is limited to furnishing enough to enable physicians to begin to cultivate humanized virus for themselves. It should be issued only to those who will report their experience in its use, as that is necessary to enable us to maintain the standard of quality. It was the attempt to replace humanized, entirely, by animal virus, and the evils which an urgent demand for a valuable article always induces which made the production of vaccine a commercial undertaking outside the supervision of Boards of Health. My own confidence in humanized virus, properly selected, is after a long experience in its use, as great as ever, and I employ it, unhesitatingly, in my own family, and in your service when available. I have found it fully as reliable in the presence of smallpox, while its operation has, as a rule, been more rapid and less severe. It is rarely cultivated now as it used to be, and in emergency, we are compelled to fall back on animal virus, to establish the humanized stock. It is to supply animal virus for its own sake, or to begin a series of humanized



vaccinations that a small station is needful, where the calf virus may be constantly produced under conditions most favorable to its purity, and where its qualities are constantly under observation and review. It could do good service by testing virus from other sources. The best mode of collection, preservation, distribution and use, are questions still not fully settled, and the station would give opportunity for a practical and useful study of them. Our organization enables a fair isolation in case of smallpox, and prompt notification of its occurrence, but the deplorable neglect of child vaccination, and the popular indifference to the practice, makes the duty of this Board, of Local Boards, of medical men and of all good citizens, clear enough. The first thought is a compulsory vaccination law. This was suggested in 1881 during the small-pox epidemic, but, as in direct charge of that outbreak, I opposed it, and after a good share of that experience, which ought to enable one to judge of the value of such legislation, I am still opposed to it. Enforce existing laws, require school children to be vaccinated, to bring a reliable medical certificate, or to exhibit satisfactory cicatrices. Establish a supply of calf lymph, under the conditions already specified, furnish it for use, free of cost for children, on the sole condition that a return be made of its operation, under the direction of medical men, and that the vaccinated report to the operator on the eighth day for examination and a certificate of the result. A report of the operation of all virus sent out is absolutely necessary, to enable us to keep that careful oversight of production, distribution and use, which will be the strongest guarantee of its value, and the strongest claim to professional and popular confidence.

*Laboratory Work:* The work here has been guided by the current needs of the Local and State Board work. It includes chemical, microscopic, and bacteriological investigations, and in some cases the work done has been supplemented by assistance in other laboratories. It has included work relating to diseases of both men and animals. Questions of the adulteration of foods, poison in foods, pathological inquiry as to suspected meat, and fish, have been part of the work. Water analyses were, in 1888, 28; in 1889, 77; in 1890, 20, and in 1891, 22, to March 1. Several important inquiries are in progress at date. Much of the work referred to will be found detailed in PUBLIC HEALTH, which I submit as a part of this report.

I call attention to Dr. Gronvold's last report on leprosy, which bring the statistics, practically, up to 1891. (See appendix.) There are but 16 cases in all. It is limited to Norwegians. It came to this country in the persons of its victims. Though here more than 40 years, not a case of its spread by heredity, or infection, has been found. All cases are under observation and the Boards of Health have abundant powers to deal with it. Each patient, now, has his own room and utensils, as a matter of decency and reasonable precaution. (See PUBLIC HEALTH for many details.)

Asiatic cholera has threatened us more, in 1890, than for several years. I advise that the contingent appropriation be continued (\$15,000), so that in the event of the disease we shall not be lacking in funds.

*The regular appropriations* for the Board have been so managed that, in no year has the expenditure exceeded the appropriation, but a considerable sum has remained unused. This is as it should be, for sudden epidemic, or other possible demand make it necessary that there should be a probable surplus.

I beg to refer to my preliminary report for further details. (PUBLIC HEALTH, Vol. VI., October, 1890, page 96.)

CHARLES N. HEWITT,

*Secretary and Executive Officer.*

## GLANDERS.

BY THE SECRETARY.

Report of the work done by the Local and State Boards of Health for the suppression and control of glanders in horses, from October 1, 1888, to January 1, 1891, a period of two years and three months.

The law under which this work has been done (chapter 200, laws of 1885) was enacted and approved in March 1885. Glanders had been introduced by importations from all adjoining States and Territories. The attack began immediately every where it was found. The details, of the combined efforts of State and Local Boards, up to October 1, 1888 will be found in the previous reports, but I add the general statistics, as abstracted from those reports as a proper introduction to this one.

## GENERAL STATISTICS.

*March 9, 1885, to November 1, 1886. (19 months.)*

Counties invaded.....	47
Number of localities invaded.....	168
Number of horses isolated as suspected.....	409
Number of horses killed, being glandered.....	227
Number of horses released as unaffected.....	162
Number of horses remaining unaccounted for.....	20

*November 1, 1886, to October 1, 1888.*

Counties invaded.....	76
Localities invaded.....	147
Number of horses isolated as suspected.....	396
Number of horses killed, having glanders.....	294
Number of horses released as unaffected.....	93
Remaining unaccounted for.....	9

*October 1, 1888, to January 1, 1891.*

Total number Counties in State .....	76
Total number Counties invaded.....	44
Total number localities invaded .....	90
Total number suspected cases.....	193
Total number killed.....	130
Total number released.....	45
Total number died.....	2
Total number remain unaccounted for.....	16

## SUMMARY FOR 1889.

*January-December.*

Total number suspected horses isolated .....	98
Total number of horses killed .....	56
Total number of animals released .....	32
Total number remaining unaccounted for .....	10

## SUMMARY FOR 1890.

*January-December.*

Total number suspected horses isolated.....	80
Total number of horses killed .....	66
Total number of horses died .....	2
Total number of animals released .....	6
Total number of horses remaining unaccounted for .....	6

The following statistical table and abstract by counties cover the fight in 1889-90, and give the evidence of some hundreds of individual reports, from each locality, which are carefully preserved in the files, of my office. The disease is now in fair control, except in a few places, which, as constantly open to the importation of infected animals, are more liable to repeated attacks. Great pains have been taken to distribute largely a circular, based upon the best authorities, for popular information, and a strong popular sentiment has grown up in many parts of the state, which have suffered most, that makes the trade in glandered animals risky and unprofitable business. The search for infected animals is still very active, and there is good reason to believe that the disease can be reduced to smaller proportions, by a steady and persistent hunt for suspicious cases. An encouraging sign is the appeal of owners of horses for help to decide whether they are glandered. This is done to protect their other animals, and from the fear that the disease may be inoculated into caretakers, as has happened at least twice within our state. Taken as a whole, the record is a striking example of the successful use of systematic and united effort, by State and Local Boards of Health, to extinguish a hopeless infectious and fatal disease, of one of our most valuable domestic animals. There has been no intermission in the effort since it began, in 1885, and the Boards are better able to cope with it, or any other infectious disease of animals, by the experience and skill so gained.

#### ABSTRACT OF STATISTICAL TABLE.

SHOWING PREVALENCE AND MORTALITY BY YEAR AND COUNTY.

##### GLANDERS.

ANOKA. 1 case in 1889, killed. None reported in 1890.

BECKER Co. In 1889, 2 cases in one locality. One killed, the other released.

BELTRAMI Co. (Unorganized.) 1889, 1 case; killed.

BENTON Co. 1889, 2 cases in one locality. Both killed. No cases reported since 1889.

BIG STONE Co. In 1890, 4 suspected cases; 2 each in 2 localities. In one locality both cases discharged. In other locality both killed.

BLUE EARTH Co. In 1888, 2 cases in November, in localities previously affected. Both killed. In 1889, 1 suspected case; released.

BROWN Co. 1 suspected case in 1889. Released.

CHIPPEWA Co. 1889, 1 case; killed.

CLAY Co. 1 suspected case in 1888. Released; 2 outbreaks in 1889, 11 cases; 5 killed, 6 discharged.

COTTONWOOD Co. 1 case in October, 1888; killed. None since 1888.

DAKOTA Co. 2 cases in 1890; 2 killed.

DOUGLAS Co. 1 case in 1890; died.

FILLMORE Co. 1 suspected case in 1888, in locality previously affected; released. In 1889, 5 suspected cases in same locality as 1888; 2 killed, 3 released. In 1890, 3 cases in 2 localities. One locality, both killed; in other, record not complete.

HENNEPIN Co. In 1889, 1 case; killed. In 1890, 26 cases in one locality. (Minneapolis) 26 killed.

JACKSON Co. 1 case in 1888; killed. None since 1888.

KANDIYOHI Co. 2 cases in 1889; 2 killed.

KITTSO Co. No outbreaks from 1887 until 1890. In 1890, 1 outbreak, 13 cases; 13 killed.

LE SUEUR Co. 2 suspected cases in 1888; 1 killed; 1 released. In 1889, 2 outbreaks; 4 suspected cases; 2 killed; 2 discharged.

LYON Co. 2 suspected cases in 1890. Record not complete.

MARSHALL Co. In 1889, one outbreak; 12 suspected cases; 9 killed; 3 discharged. In 1890, 4 cases in localities previously affected; 4 killed.

MEEKER Co. 2 suspected cases in 1888; released. No cases since 1888.

MORRISON Co. 1 outbreak in 1889; 6 suspected cases; 4 killed; 2 discharged.

MOWER Co. 2 outbreaks in 1889; 5 suspected cases; 3 killed; 2 discharged.

MURRAY Co. In 1890, 1 case; killed.

NOBLES Co. In October, 1888, 1 suspected case; released. 1 case in 1890; killed.

NORMAN Co. In 1889, 1 outbreak; 5 suspected cases; 2 killed; 3 discharged. In 1890, 6 suspected cases same locality affected in 1889; 5 killed, 1 discharged.

OLMSTED Co. In 1889, 2 cases; 2 killed. 1890, 1 case; 1 killed.

OTTER TAIL Co. 1 case in 1889; killed. 1890, 1 case; killed.

POLK Co. 2 cases in 1888; both killed. 1889 3 cases; 1 killed; 2, record not complete. 1890, 4 suspected cases; 1 killed; 2 discharged; 1 record not complete.

REDWOOD Co. 1 suspected case in 1889; record not complete. In 1890, 1 suspected case; record not complete.

RENVILLE Co. 2 suspected cases in 1889; discharged. 2 cases in 1890; 2 killed.

ROCK Co. 4 suspected cases in 1889; record not complete.

SIBLEY Co. 1 outbreak in 1889; 3 cases; 3 killed. In 1890, 1 suspected case; released.

STEARNS Co. 1 outbreak in 1889; 4 cases; 4 killed.

ST. LOUIS Co. 1 case in 1889; killed. In 1890, 2 cases; 1 died; 1 killed.

SWIFT Co. 1 case in October, 1888; killed. None since 1888.

TODD Co. 4 suspected cases in 1889; 1 killed; 3 discharged. No cases reported since 1889.

WADENA Co. In 1888, 1 suspected case; discharged. No cases reported since.

WASECA Co. 1 suspected case in 1889; released. In 1890, 1 case; killed.

WILKIN Co. 1890, 1 suspected case: record not complete.

WINONA Co. 1 case in 1889, killed; In 1890, 1 case; killed.

WRIGHT Co. 1 suspected case in 1889; discharged.

YELLOW MEDICINE Co. 6 suspected cases in 2 localities in 1889; 2 killed; 2 discharged; 2 record not complete. 1 case in 1890; killed.



	1888*-3 Months					1889 12 Months					1890 12 Months				
	Cases.	Killed.	Released.	Remaining.	Date of Report.	Cases.	Killed.	Released.	Remaining.	Date of Report.	Cases.	Killed.	Released.	Remaining.	Date of Report.
ANOKA Co.															
Anoka City.....						1	1			5-29					
BECKER Co.															
Burlington Tp.....						2	1	1		5-14					
BELTRAMI Co.															
Unorganizd.....						1	1			3-26					
BENTON Co.															
Sauk Rapids, C.....						2	2			5-13					
BIG STONE Co.															
Odessa Tp.....											2		2		9-19
Ostrey Tp.....											2	2			3-20
BLUE EARTH Co.															
Mankato Tp.....	1	1			11-1										
Decoria Tp.....	1	1			11-16										
Vernon Center Tp.....						1		1		3-27					
BROWN Co.															
London Tp.....						1		1		3-26					
CHIPPEWA Co.															
Tunberg Tp.....						1	1			11-13	2	2			7-11
CLAY Co.															
Hawley V.....	1		1		11-20										
Alliance Tp.....						7	4	3		2-12					
Riverton Tp.....						4	1	3		5-3					
COTTONWOOD Co.															
Lakeside Tp.....	1	1			10-9										
DAKOTA Co.															
Hastings C.....											2	2			1-1
DOUGLAS Co.															
Brandon Tp.....											1	died			4-23
FILLMORE Co.															
Fountain V.....	1		1		12-1										
Fountain Tp.....						5	2	3		1-30					
Newburg Tp.....											1	1			1-29
"											1	1			5-27
"											1			1	8-22
Chatfield V.....															
HENNEPIN Co.															
Plymouth Tp.....						1	1			2-28					
Minneapolis C.....											26	26			5-20
JACKSON Co.															
Des Moines Tp.....	1	1			10-9										
KANDYOH Co.															
Holland Tp.....						2	2			6-11					
KITTSON Co.															
Granville Tp.....											1	1			3-24
Unorganized Tp.....											9	9			3-3
Clow Tp.....											1	1			4-18
"											1	1			10-0
St. Vincent Tp.....											1	1			9-16
LESUEUR Co.															
New Prague V.....	1		1		10-4										
Montgomery Tp.....						1		1		1-13					
Waterville Tp.....						2	1	1		1-26					
Montgomery V.....	1	1			10-17	1	1			8-6					
LYON Co.															
Rock Lake Tp.....											2			2	12-3
MARSHALL Co.															
Middle River Tp.....						2	2			4-5		1			
Wanger Tp.....						2	2			4-2	1				6-24
Big Woods Tp.....						1			1	4-2					
"						1	1			9-12					
Tamerac Tp.....						2	2			4-2					
Alma Tp.....						1			1	5-15		2			4-5
"											2				
Stephen V.....						3	2		1	5-15		1			
Sinnot Tp.....											1				4-14
MEeker Co.															
Collinwood Tp.....	2		2		11-7										
MORRISON Co.															
Bellevue Tp.....						6	4	2		9-11					

\* October, November and December.

	1888*-3 Months					1889-12 Months					1890-12 Months				
	Cases.	Killed.	Released.	Remaining.	Date of Report.	Cases.	Killed.	Released.	Remaining.	Date of Report.	Cases.	Killed.	Released.	Remaining.	Date of Report.
MOWER Co.															
Austin C.....						1	1			1-10					
"						1		1		1-22					
Bennington Tp.....						2	2			1-25					
Lansing Tp.....						1		1		5-5					
MURRAY Co.															
Fulda V.....											1	1			5-14
NOBLES Co.															
Graham Lakes Tp....	1		1		10-29										
Ellsworth V.....						1	1			3-27					
NORMAN Co.															
Shelly Tp.....						5	2	3		11--	6	5	1		9-11
OLMSTED Co.															
Eyota Tp.....						2	2			1-25					
Rochester C.....											1	1			8-28
OTTER TAIL Co.															
Carlisle Tp.....						1	1			5-11					
Butler Tp.....											1	1			5-28
POLK Co.															
Fairfax Tp.....	1	1			10-2										
Crookston Tp.....	1	1			12-29										
Roome Tp.....						1	1			7-20					
Tilden Tp.....						1		1		7-6					
Angus Tp.....						1		1		10-30					
Sandville Tp.....											2		2		2-28
Tynsid Tp.....											1	1			6-18
Queen Tp.....											1			1	10-6
REDWOOD Co.															
Johnsonville Tp....						1		1		8-5					
Lamberton V.....											1			1	7-14
RENVILLE Co.															
Emmett Tp.....						2		2		5-21					
Crooks Tp.....											1	1			5-26
Morton V.....											1	1			10-10
ROCK Co.															
Luverne Tp.....						1			4	9-4					
SIBLEY Co.															
Moltke Tp.....						3	3			5-5					
Green Isle Tp.....											1		1		2-27
STEARNS Co.															
Spring Hill Tp.....						1	1			3-20					
Oak Tp.....						2	2			7-6					
STEVENS Co.															
Pepperton Tp.....						4	4			11-11					
St. Louis Co.															
Duluth C.....						1	1			11-27	1	1			8-4
Herman Tp.....											1	died			12-17
SWIFT Co.															
Swenoda Tp.....	1	1			10-26										
TODD Co.															
Bartlet Co.....						1	1			5-25					
Germania Tp.....						2		2		6-13					
Reynolds Tp.....						1		1		6-18					
WADENA Co.															
Wing River Tp.....	1		1		11-17										
WASECA Co.															
Janesville V.....						1		1		6-25					
Woodville Tp.....											1	1			6-23
WILKIN Co.															
Breckenridge V.....											1			1	5-23
WINONA Co.															
Winona C.....						1	1			7-9					
Warren Tp.....											1	1			11-23
WRIGHT Co.															
Silver Creek Tp.....						1		1		9-22					
YELLOW MED. Co.															
Friendship Tp.....						2		2		5-30					
Oshkosh Tp.....						2		2		11-16					
Lisbon Tp.....						2	2			12-30					
Canby V.....											1	1			4-30

\* October, November and December.

*DR GRONVOLD'S REPORT ON LEPROSY IN MINNESOTA, UP TO  
SEPTEMBER 1, 1890.*

*To the Secretary of the State Board of Health of Minnesota.*

DEAR SIR:—In pursuance of instructions received through you, dated February 25, 1890, I have, by correspondence mainly, made investigations throughout the State, concerning the number of lepers within its boundaries. Circulars have been distributed to persons, who, there was reason to believe knew anything about the matter. About 140 clergymen, of different denominations, have been addressed, and about 70 have sent answers. Members of the Minnesota State Medical Society, and other physicians, have been applied to, and about 50 have answered. I have also corresponded with other persons; town clerks, county supervisors, and others, to obtain information in special cases.

As a result of the inquires (up to September, 1890) sixteen cases of leprosy are now known to be in the State. The number of lepers is larger than previously reported, because some were overlooked in the previous investigations, as the disease appears in them in a very mild form, and they enjoy comparatively good health. Occasional pains and discomforts have been ascribed to rheumatism, and in some of them the disease seems, at present, to be at a standstill, especially in cases of the anæsthetic form. In other cases the symptom of the disease have only lately been conspicuous.

As long as immigration goes on there will be found, occasionally, new cases, while the old ones die out. After the experience of the past forty years there is little danger of the disease spreading. We have had lepers among us for the last fifty years, and not one case, of even probable contagion, has been discovered. The disease is dying out. As to keeping out the disease, in the early stages, by quarantine, it is as Dr. Hansen, of Bergen, Norway, says—impossible—as not even an expert could, at that time, make out the diagnosis.

The following is a list of the cases now in Minnesota, with some of the details; the residence is given by counties.

No.	Sex	Residence	Age	In America	A Leper	Forms of Disease	Present Condition
1	Male	Renville	74 yrs.	24 yrs.	17 yrs.	Anaesthetic	Very good
2	"	Rice	36 "	27 "	14 "	Tubercular	Getting worse
3	"	Otter Tail	60 "	16 "	30 "	Anaesthetic	Fairly good
4	"	Wilkin	50 "	19 "	32 "	"	Good
5	"	Dodge	42 "	19 "	23 "	"	Fairly good
6	"	Faribault	70 "	23 "	23 "	"	Getting old
7	"	Polk	56 "	26 "	2 "	Tubercular	Getting worse
8	"	Yellow Med.	33 "	14 "	5 "	"	"
9	"	Chisago	52 "	9 "	10 "	"	"
10	Female	Polk	50 "	16 "	20 "	Anaesthetic	Doing work
11	Male	Renville	47 "	3 "	5 "	"	Atrophy of muscle
12	"	Hennepin	28 "	10 "	6 "	Tubercular	.....
13	"	Clay	40 "	22 "	2 "	Anaesthetic	Good
14	Female	Fillmore	40 "	20 "	16 "	Tubercular	Very good
15	"	Goodhue	"	20 "	"	Anaesthetic	.....
16	Male	Mower	64 "	34 "	"	"	.....

The date assigned to the beginning of leprosy by its victim is not always reliable, as will be shown further on. There are 10 cases of the anaesthetic form of the disease, and most of them are walking, tolerably well, and doing some work. All are between 40 and 74 years of age, 4 are over 60. One man of 60 years has had the disease for 30 years, and one 50 years old has had it for 32 years; the disease seems, in some of them, to have stopped. Six persons have the tubercular form of disease, and are between 28 and 56 years old. The time they have had the disease is given, for three of them, between 5 and 10 years; one 10, one 14 years, and one woman 40 years old, has had the disease at least 16 years, and is better now than since she got the disease. It should be remarked here, that lepers very seldom know, or care to know the time when the disease manifested itself. The number set down under "A Leper" is, therefore, not to be relied on, without other evidence to support it. At least one case has had the chance to be exposed to contagion in this country, having had social intercourse with No. 2, and his deceased leprosy brothers. But, on the other side, he was exposed to contagion in the old country, before he came here. He is from a place in the old country where there are several lepers, a nest of leprosy, and it seems most reasonable to believe that he contracted the disease there. In view of the fact that children, born in this country, of leprosy parents, though exposed in a high degree to contagion, have not, so far, after 50 years of experience, once had the disease, it seems probable that, in this case the disease was contracted in the old country. New houses, new furniture, and other new things, together with greater cleanliness, the result of greater economical prosperity in this country, seems inimical to, and a safeguard against the transmission of the disease by contagion. If one is right in saying that the first had the disease (any symptoms of it) nine years after he came here, it must be remembered that in some of our old cases where there was no chance of contagion after they left the old country, the disease was first discovered nine years, or more, after they had come here.

As regards the sources of my information I have to state: The first six cases are old ones, and known to the Board before the last investigation began. No. 10 is an old case, known to me since June 15, 1888. She moved away and we lost sight of her until she was re-discovered by Dr. Nelson, of Fertile, by whom, and his partner, Dr. Knickerbocker, No. 7 was reported. No. 8, by Dr. Knut Heogh, 318 Nicollet avenue, Minneapolis, and also by a clergyman. No. 9 was reported as suspicious by Consul Christensen, of Rush City, and seen by me March 26, 1890, and pronounced to be a case of tubercular leprosy. It was reported later by Dr. Denslow, of St. Paul. Nos. 11 and 13 were reported by a clergyman. No. 13 was reported by Dr. Van der Horek, Minneapolis. No. 14, by Dr. Magelson, Rushford. No. 15, by Dr. Heogh, Minneapolis. No. 16, by W. W. Sweet, County Commissioner, Third District, of Mower County, and the details were furnished by Drs. Knight and Alsdorff, Le Roy. I have also to acknowledge information and assistance from Dr. Cooley, of Madelia, and Dr. Stoddard, of Franklin, both of whom will probably give information as to cases of leprosy; from Dr. Bracken, Dr. Kilvington and Dr. Roberts, of Minneapolis; Dr. Puffer, of Bird Island and Dr. Jenner, of St. Paul, all of whom have given valuable information; also from thirty others, who have kindly answered the circular, giving the information that no case of leprosy was known to them in their part of the country. Respectfully,

September 1, 1890.

CHR. GRONVOLD, M. D.



## "STATE BOARD OF HEALTH" FUND—FINANCIAL STATEMENT.

*October 1, 1888 to August 1, 1889.*

Appropriation August 1, 1888 to August 1, 1889..... \$5,000 00  
 Expenses to October 1, 1888, from August 1, 1888..... \$ 614 40

Balance October 1, 1888..... 514 60 5,000 00  
 4,385 60  
\$5,000 00 \$5,000 00

Balance October 1, 1888..... \$4,385 60  
 Account November 10, " —October, 1888..... \$ 178 41  
 December 7, " —November, " ..... 185 19  
 January 15, 1889—December, " ..... 106 61  
 February 7, " —January, 1889..... 151 81  
 March 4, " —February, " ..... 77 71  
 April 6, " —March, " ..... 223 18  
 May 6, " —April, " ..... 166 34  
 June 6, " —May, " ..... 169 00  
 July 6, " —June, " ..... 181 18  
 August 14, " —July, " ..... 352 90  
 Secretary's salary, ten months..... 2,088 30  
 3,875 63 4,385 60  
 Balance turned over to treasurer August 1, 1889..... 569 97

\$4,385 60 \$4,385 60

Appropriation August 1, 1889 to August 1, 1890..... \$7,500 00  
 Account September 3, 1889—August, 1889..... \$ 112 57  
 October 2, " —September, " ..... 280 37  
 November 1, " —October, " ..... 170 06  
 December 2, " —November, " ..... 175 15  
 January 4, 1890—December, " ..... 196 66  
 February 1, " —January, 1890..... 210 70  
 March 4, " —February, " ..... 137 94  
 March 17, " ..... 250 00  
 April 2, " —March, " ..... 221 29  
 May 3, " —April, " ..... 190 26  
 June 4, " —May, " ..... 119 08  
 July 1, " —June, " ..... 168 47  
 August 9, " —July, " ..... 123 07  
 Secretary's salary..... 2,499 96

\$4,805 58 \$7,500 00

Balance turned over to treasurer August 1, 1890..... 2,694 42

\$7,500 00 \$7,500 00

Appropriation August 1, 1890 to August 1, 1891..... \$7,500 00  
 Account September 9, 1890—August, 1890..... \$ 356 69  
 October 3, " —September, " ..... 123 13  
 November 6, " —October, " ..... 234 11  
 December 4, " —November, " ..... 354 29  
 January 5, 1891—December, " ..... 495 83  
 Secretary's salary, five months..... 1,041 65

2,665 70 7,500 00

Balance January 1, 1891..... 4,834 30

\$7,500 00 \$7,500 00

## ITEMIZED STATEMENT "STATE BOARD OF HEALTH FUND"—FINANCIAL STATEMENT.

	Oct. 1, 1888, to Aug. 1, 1889.	Aug. 1, 1889, to Aug. 1, 1890.	Aug. 1, 1890, to Jan. 1, 1891.
For clerks.....	\$ 490 00	\$ 574 50	\$ 270 00
Telegraph and telephone service.....	63 92	49 62	23 29
Books and binding for library.....	37 55	56 75	298 35
Paper for circulars and blanks.....	78 14	85 04	76 68
Laboratory supplies, apparatus and expenses.....	294 02	294 67	39 28
Stationery and supplies for office.....	38 37	36 05	29 53
Express and freight charges.....	46 36	24 89	23 91
Traveling expenses—members of Board.....	137 86	356 11	258 71
Fuel.....	36 55	12 56	13 25
Postage.....	94 18	73 53	80 74
Printing circulars, special reports and blanks.....	237 14	261 53	181 53
Expenses in control of infectious diseases.....	169 56	245 91	62 01
Expense of conferences on infectious disease with Local Boards of Health.....	50 80	31 49	25 44
Expenses of investigating stock yards, Austin.....	17 88		
Secretary's salary.....	2,083 30	2,499 95	1,041 65
Rent of office, from January 1, 1889.....		190 00	50 00
Expenses of investigating and advising as to the city sewerage, Rochester.....		11 97	
Expenses of vaccine experimental station. (November and December.).....			181 33
Total.....	\$ 3,875 63	\$ 4,805 58	\$ 2,605 70

FINANCIAL STATEMENT "INFECTIOUS DISEASES OF ANIMALS"  
—FUND.

Appropriation August 1, 1888 to August 1, 1889.....		\$3,000 00
Expense to October 1, 1888, from August 1, 1888.....		\$254 96
Balance October 1, 1888.....		2,745 04
		<u>\$3,000 00</u> <u>\$3,000 00</u>
Balance October 1, 1888.....		\$2,745 04
Account November 10, "—October, 1888.....	\$ 70 43	
December 7, "—November, ".....	54 80	
January 15, 1889—December, ".....	83 90	
February 7, "—January, 1889.....	86 60	
March 4, "—February, ".....	100 55	
April 6, "—March, ".....	120 81	
May 6, "—April, ".....	181 56	
June 6, "—May, ".....	61 96	
July 6, "—June, ".....	93 60	
August 11, "—July, ".....	98 93	
		<u>983 17</u> <u>2,745 04</u>
Balance turned over to treasurer August 1, 1889.....	1,811 87	
		<u>\$2,745 04</u> <u>\$2,745 04</u>
Appropriation August 1, 1889 to August 1, 1890.....		\$3,000 00
Account September 3, 1889—August, 1889.....	50 40	
October 2, "—September, ".....	122 99	
November 1, "—October, ".....	74 26	
December 2, "—November, ".....	91 13	
January 4, 1890—December, ".....	64 00	
February 1, "—January, 1890.....	72 50	
March 4, "—February, ".....	74 25	
April 2, "—March, ".....	102 25	
April 28, ".....	7 10	
May 3, "—April, ".....	58 00	
June 4, "—May, ".....	121 51	

## FINANCIAL STATEMENT.

23

July 1, "—June, "	79 46	
August 9, "—July, "	106 52	
	1,028 37	3,000 00
Balance turned over to treasurer August 1, 1890.....	1,971 63	
	<u>\$3,000 00</u>	<u>\$3,000 00</u>
Appropriation August 1, 1890 to August 1, 1891.....		\$3,000 00
Account September 9, 1890—August, 1890.....	\$ 215 14	
October 3, "—September, "	98 92	
November 6, "—October, "	115 56	
December 4, "—November, "	59 85	
January 5, 1891—December, "	84 50	
	573 97	3,000 00
Balance turned over to treasurer January 1, 1891.....	2,426 08	
	<u>\$3,000 00</u>	<u>\$3,000 00</u>

## ITEMIZED STATEMENT "INFECTIOUS DISEASES OF ANIMALS"—FUND.

	Oct. 1, 1888 to Aug. 1, 1889.	Aug. 1, 1889 to Aug. 1, 1890.	Aug. 1, 1890 to Jan. 1, 1891.
For clerks.....	\$ 440 00	\$ 572 50	\$ 250 00
Telegraph and telephone service.....	8 94	6 90	4 39
Printing and paper for circulars and blanks.....	141 68	122 22	50 89
Stationery and supplies for office.....	1 81	6 00	
Express and freight charges.....	1 80	5 69	
Fuel.....	32 00	9 31	
Postage.....	79 24	48 82	13 50
Expenses in control of infectious diseases of animals.....	127 70	256 93	94 34
Expenses dealing with glanders on the Roseau river (un- organized territory).....			160 85
Expenses investigating glanders in Marshall Co.....	99 90		
Total.....	\$ 933 17	\$ 1,028 37	\$ 573 97

## "VITAL STATISTICS" FUND—FINANCIAL STATEMENT.

October 1, 1888 to August, 1, 1889.

Appropriation from August 1, 1888 to August 1, 1889.....	\$1,000 00
Expenses to October 1, 1888 from Aug. 1, 1888.....	\$ 151 08
	<u>\$151 08</u>
Balance turned over to treasurer October 1, 1888.....	848 92
	<u>\$1,000 00</u>
Balance October 1, 1888.....	\$ 848 92
Account November 10, 1888 for October, 1888.....	\$ 35 00
December 7, "—November, "	40 18
January 15, 1889—December, "	60 75
February 7, "—January, 1889.....	90 30
March 4, "—February, "	78 50
April 6, "—March, "	73 88
May 6, "—April, "	67 75
June 6, "—May, "	67 28
July 6, "—June, "	67 50
August 14, "—July, "	65 50
	647 34
	<u>848 92</u>
Balance turned over to treasurer August 1, 1889.....	201 58
	<u>\$ 848 92</u>

## FINANCIAL STATEMENT.

Appropriation August 1, 1889 to August 1, 1890.....		\$1,000 00
Account September 3, 1889 for August, 1889.....	\$ 35 00	
October 2, "—September, ".....	60 00	
November 1, "—October, ".....	67 80	
December 2, "—November, ".....	61 00	
January 4, 1890—December, ".....	55 00	
February 1, "—January, 1890.....	95 10	
March 4, "—February, ".....	61 00	
April 2, "—March, ".....	73 50	
May 3, "—April, ".....	70 00	
June 4, "—May, ".....	65 00	
July 1, "—June, ".....	79 00	
August 9, "—July, ".....	63 06	
	805 46	1,000 00
Balance turned over to treasurer August 1, 1890 .....	194 54	
	\$1,000 00	\$1,000 00
Appropriation August 1, 1890 to August 1, 1891 .....		\$1,000 00
Account September 9, 1890 for August, 1890.....	57 00	
October 3, "—September, ".....	79 60	
November 6, "—October, ".....	77 80	
December 4, "—November, ".....	63 00	
January 5, 1891—December, ".....	76 30	
	353 70	1,000 00
Balance January 1, 1891 .....	646 30	
	\$1,000 00	\$1,000 00

## ITEMIZED STATEMENT OF EXPENDITURES—"VITAL STATISTICS" FUND.

	Oct. 1, 1888 to Aug. 1, 1889.	Aug. 1, 1889 to Aug. 1, 1890.	Aug. 1, 1890 to Jan. 1, 1891.
For clerks.....	\$ 466 71	\$ 625 00	\$ 291 20
Printing and paper for circulars, blanks, forms, etc.....	13 63	9 06	9 50
Stationery and supplies for office.....	11 05		
Express and freight charges.....	25 35	23 60	
Postage.....	130 60	138 50	53 00
Fuel.....		9 30	
Total.....	\$ 647 34	\$ 805 46	\$ 353 70

# Minnesota Vital Statistics Sex Ratio Chart No. 1

## Males

Compare with Monthly Mortality for the years 1887-1888-1889 and 1890 (June)

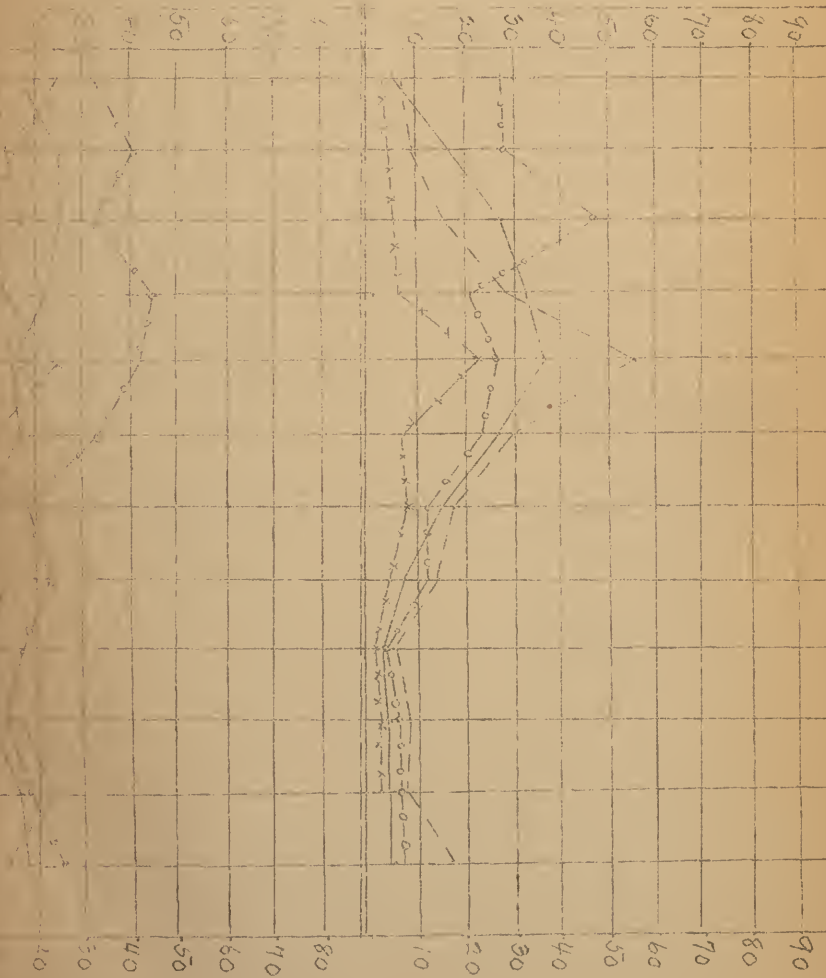
Total deaths 1887 1888 1889  
all causes 13010 15018 14807

Sex Ratio 1887 1888 1889  
all causes 1029 1028 1022

## Female Infants

Total deaths 1887 1888 1889  
all causes 13010 15018 14807

Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec







1889-1890  
 The Year under the II

# District No. 1

General Average Yearly

Mr. T. L. J. for the year 1889

1889-1890 1890-1891

1889-1890 1890-1891  
 1889-1890 1890-1891  
 1889-1890 1890-1891

1889-1890 1890-1891  
 1889-1890 1890-1891  
 1889-1890 1890-1891

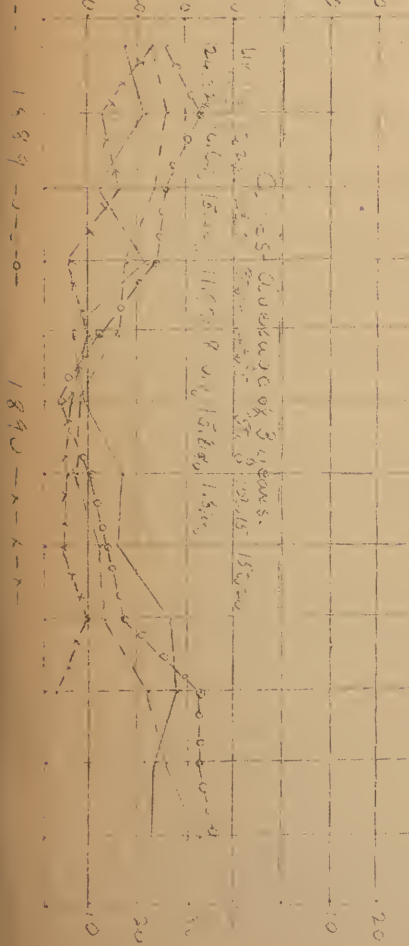
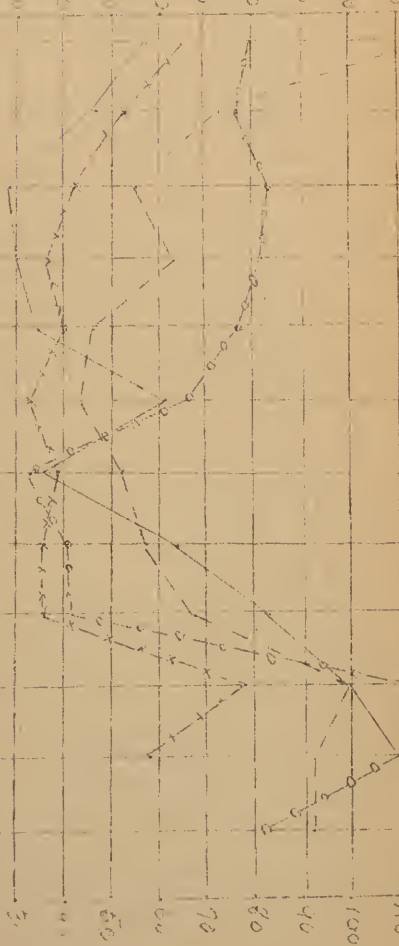
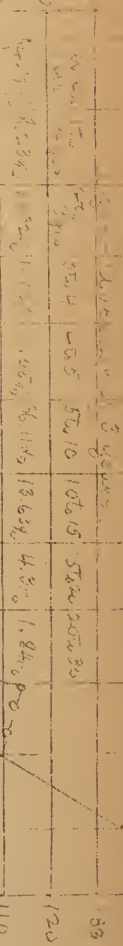
1889-1890 1890-1891  
 1889-1890 1890-1891  
 1889-1890 1890-1891

1889-1890 1890-1891  
 1889-1890 1890-1891  
 1889-1890 1890-1891

1889-1890 1890-1891  
 1889-1890 1890-1891  
 1889-1890 1890-1891

1889-1890 1890-1891  
 1889-1890 1890-1891  
 1889-1890 1890-1891

Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec







# Pneumonia

Comparative Monthly  
Mortality for the Years  
1887-1888-1889-1890 (1 mos)

Total (deaths)  
all causes } 1887 1888 1889 1890  
13010 15018 14807

Total (even  
Pneumonia) } 619 935 858

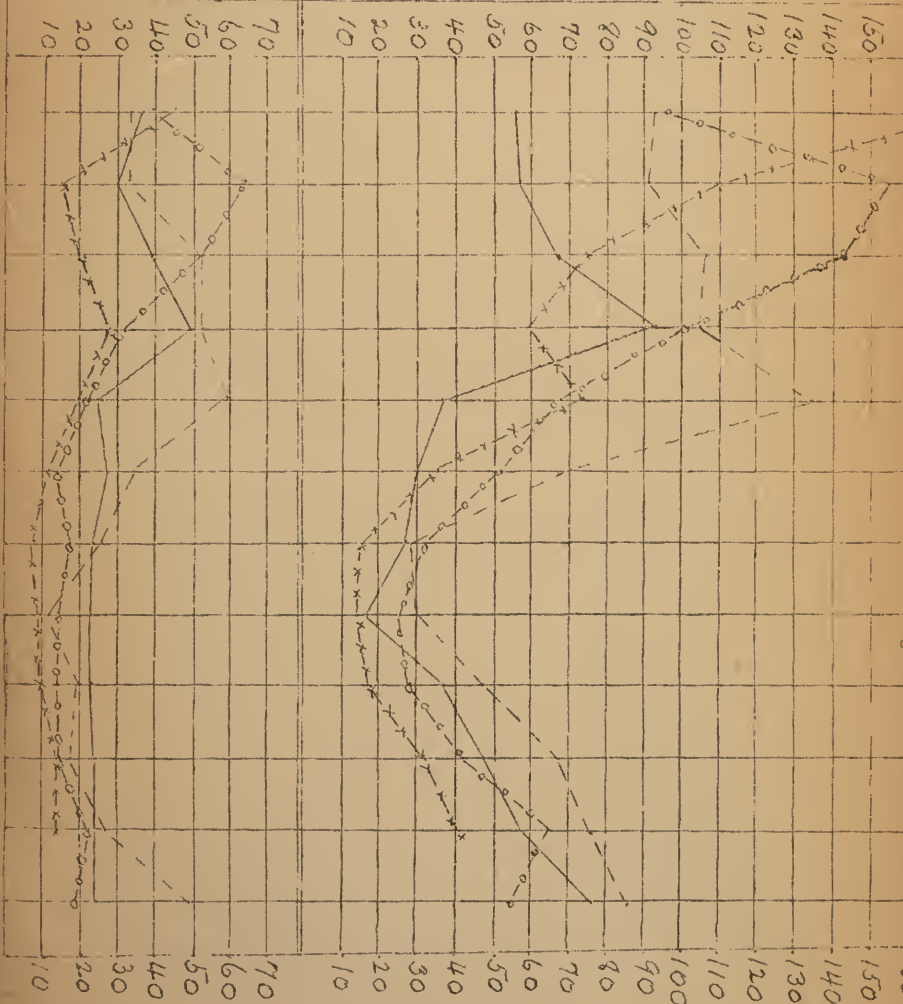
Percent of  
total deaths } 4.66 6.22 5.80  
(all causes)

Excess of  
mortality mortality for the  
years 1887-1888-1889-1890 (1 mos)  
Total (deaths) } 1887 1888 1889 1890  
all causes } 13010 15018 14807

Total (even  
Pneumonia) } 348 414 330

Percent of  
total deaths } 2.62 2.75 2.22  
(all causes)

Jan Feb Mar Apr May June July Aug Sept Oct Nov Dec



1887 1888 1889 1890



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# PUBLIC HEALTH IN MINNESOTA,

A MONTHLY JOURNAL OF

STATE, MUNICIPAL, FAMILY AND PERSONAL HYGIENE, AND

OF VETERINARY SANITARY SCIENCE

---

THE OFFICIAL PUBLICATION OF

THE MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS.

---

EDITED BY

CHARLES N. HEWITT, M. D.,

*Secretary and Executive Officer of the Board.*

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INCLUDING OF

Vol. IV,	-	-	-	-	-	January, 1889, to March, 1889
Vol. V,	-	-	-	-	-	One Year, [twelve numbers.]
Vol. VI,	-	-	-	-	-	March, 1890, to January, 1891.

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## PUBLIC HEALTH IN MINNESOTA.

*Vol. IV. (Nos. 11 and 12) Vol. V.; Vol. VI. (1 to 10 inclusive.)*

(NOTE—Abbreviations: H. O., Health Officer; Act. H. O., Acting Health Officer; C. B. H., Chairman Tp. Board of Health; T. C., Township Clerk.)

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# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

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VOL. IV. NO. 11

JANUARY, 1889.

WHOLE NO. 47

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JANUARY, 1889.

## DISEASES OF MEN.

Diphtheria .....	{ cases, 143
	{ deaths, 45
Scarlatina .....	{ cases, 73
	{ deaths, 1

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for .....	15
Reported during the months .....	14
Killed .....	9
Released .....	9
Isolated .....	8

Remaining February 1st, 1889, isolated or not accounted for .....

11

NOTE.—Most of these are cases exposed, and isolated for further observation.

THE REPORT OF THE SECRETARY TO THE STATE BOARD OF HEALTH, and the index to this Journal from November, 1886, to January, 1889, are published with this number. It is expected that Chairmen and Health Officers have preserved the files belonging to their Boards, which have been sent them regularly. No complete files are left. We have some odd numbers which we will supply to any who need them, if they will send their list immediately.

THE end of 1888 brought a great accumulation of work into this office. In a single department—Vital Statistics—the accounts of 1,400 clerks and Health Officers were to be closed and certificates for their pay to be sent to Clerks of District Courts. The original returns must have been compared, corrected, and recorded in our books before this could be done. They were more than 16,000 in number, and their collection and condensation involved the distribution of more than 75,000 blanks and circulars, the writing of several hundred letters, and the copying and verifying of about 50,000 separate entries in our registers.

When this was done, the data were available for the making

up of the monthly and annual reports. *The monthly* reports began with January, 1888, and have been constantly improving in completeness and value to date. In August, the State Printing Commission gave the Secretary permission to print the monthly report and a section of the annual report as appendix to PUBLIC HEALTH in Minnesota, and in this way these reports have been distributed to every Local Board of Health in the State. The general tables of births and deaths for the years 1886-87-88, will be concluded with the next number. It will be seen that they bring the returns of births and deaths up to October, 1888. We shall probably defer the final summing up for 1888 till May or June, so that all available data may be used. The report on Vital Statistics speaks for itself, and will bear comparison with similar statistics in any other State. Our own feeling is, that it is a fair beginning, and that the end of 1889 ought to find us well along from our present position. This much our readers may be sure of, nothing has been left undone to make the returns (of death particularly) as exact as possible, and our thanks are due to the physicians who have kindly aided us, and to the increasing accuracy of the registry by clerks.

---

SMALL Pox was reported twice, during January, in Minneapolis. In neither case could the infection be traced, nor had they any relation to each other. In both outbreaks, a large exposure of other people is reported, but prompt action was taken by Dr. Kilvington, and no cases have been reported outside the houses first invaded. Abstracts of his reports will be found under "Infectious Diseases of Men."

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TO THE CHAIRMEN OF TOWNSHIP BOARDS OF HEALTH.—The following is a copy of circular letter and postal card blank which has been forwarded to your Town Clerk, with the request that he fill it with *names and addresses* of the new Board, to be elected in March. You will greatly help our work if you will see that the Clerk makes this report promptly.

The copy of PUBLIC HEALTH IN MINNESOTA, which has been mailed to you regularly, is the property of your Board, and, with any correspondence and blanks pertaining to sanitary matters, which may be in your hands, should be turned over to your successor.



Red Wing, Minn., March 5, 1889.

To Clerks of Townships:

Enclosed find a postal card blank so printed as to enable you with the least trouble, to fill in the names and addresses of the Board elected in March, 1889. Will you please fill it out immediately after the election and mail to me.

Any circulars, blanks, and the Register of Vital Statistics, you will please hand to your successor.

Be sure and give post-office address of each member, and of the new Town Clerks Yours truly,

Chas. N. Hewitt, M. D.,  
Secretary

**TOWN CLERK PLEASE FILL AND RETURN THIS IMMEDIATELY AFTER ELECTION.**

Township \_\_\_\_\_ || Co. of \_\_\_\_\_ || Town No. \_\_\_\_\_ || Range No. \_\_\_\_\_

**Dr. Hewitt, Secretary State Board of Health and Vital Statistics:**

You are hereby notified that on the \_\_\_\_\_ day of \_\_\_\_\_ 1889,  
the following were elected the Local Board of Health (Board of Supervisors)  
for this Town for the year ending \_\_\_\_\_ 1890:

NAME

P. O. ADDRESS.

Chairman.

Supervisor.

Supervisor.

Town Clerk.

(Signed,)

Retiring Town Clerk.

Dated \_\_\_\_\_ 18... | P. O. Address \_\_\_\_\_

## INFECTIOUS DISEASES OF MEN.

*Small Pox in Minneapolis.*—Under date, January 14, the Health Officer Dr. Kilvington, reports a case of varioloid, woman, about 28 years, married adopted child. Her first physician called the disease trichinosis, and a pustular rheumatism. For a week, the next promptly recognized and reported it. One hundred persons probably exposed. The family—husband and child with patient—removed to Quarantine Hospital. Feb. 2, Dr. Kilvington writes: "Outbreak subsided. Husband and child had mild attack, as did two children down stairs in the same house. All recovered and quarantine removed." Feb. 2, Dr. Kilvington reports: "January 29, called to College Hospital to see suspected case; found variola. Patient, a woman, about 40, sent to Quarantine Hospital. She had been in the city three months. January 7, went to a Scandinavian hotel on Thirteenth Avenue. Got sick there, and on the 27th went to a friend's house. She was placed in bed with two children, in a small unventilated room, and in same room with the father and mother of the children, there being no space between the bed and the wall. Eleven other persons were exposed in this house, beside one who had gone out of the city. She was sent for and the whole number isolated and vaccinated. Sixteen boarders and thirteen visitors at the hotel, were vaccinated and quarantined. One from the hotel was in the lock-up. He was released, vaccinated and returned to the hotel, and 57 tramps in lockup vaccinated."

*Diphtheria in Alma.*—The following, is a fair specimen of the reports received from Township Boards of Health. This town is one in the extreme northwest of the State. The Board have never reported infectious disease to the State Board before. The chairman, Mr. Chas. Hunt, has for at least three years held his present position. Judged by this report, he ought to be retained as long as he will serve:

ALMA, Marshall Co., Minn., February 7, 1889.

*Secretary State Board of Health:*

I being notified by the Secretary of the Local Board of Health, Jan. 12, 1889, that Diphtheria was in our town, in the house of S. M.—, N. E.  $\frac{1}{4}$ , Sec. 8, I immediately inquired into said case, and found the same to be true. I quarantined said house the same day. The first case, a girl, 14 years old, died. Jan. 14, second case, a boy, age 5 years old, recovered. Jan. 15, third case, a boy, 3 years old, died Feb. 6. Jan. 15, fourth case, father, recovered. Jan. 17, fifth case, girl, 27 years old, died Jan. 24. I heard of a case of sore throat at the house of J. M.—, S. E.  $\frac{1}{4}$ , of Sec. 8. I sent a doctor out same day who reported it diphtheria. House quarantined that night. Jan. 15, one case, girl 11 years old, died Jan. 18. House disinfected and no spread. S. M.'s house is being disinfected at this time. These are the only cases in the town. Every precaution has been taken to stop the disease and I think we have got it checked. The origin is unknown to me. I presume it was carried from Argyle by one or both of those families. Dr. O. E. Belcourt, was in attendance on all of the cases in our town.

Yours with regard,

CHAS. HUNT,  
Chairman Board of Health.

Jan. 4, 1889, in Swan River Township, Morrison County, Daniel O'Donnell, T. C., reported:

"We have in this town three cases of diphtheria. In one family our Board have quarantined the house, but it is hard to stop some of the family and friends from going from one house to another when they get a chance. The

family is very poor and have no means to pay for a doctor or medicine. We have hired a man to see to those people. Please let us know if the county or the town has not to bear the expenses in such cases. The citizens do not want to give anything to those people without the money for it. I think the county ought to bear the expenses. We are doing everything we can to stop the spread of the disease. Please give us some information on what to do."

Jan. 9, Secretary replied: "Herewith I send you circulars, etc., for distribution. See that isolation and disinfection are thoroughly enforced. Under Sec. 28, Chap. 132, laws of 1883, your Board have power to employ such persons as are necessary to carry into effect the provisions of the law, also to employ physicians and provide necessaries in cases of poverty. Such expenses are paid by the county, as provided in Sec. 2, Chap. 4, laws of 1885, amending Sec. 29, Chap. 132, laws of 1883. Keep me informed."

Jan. 12, the T. C. reported:

"Yours of the 9th at hand. There was one more new case of diphtheria in the same family, as I had informed you, which proved fatal. The deceased was a female, 3 years old. She lived only four days after first symptoms. The first of the family that was affected is now 15 days, and is very low; death is expected at any hour. There are 7 children in this family; only 4 cases as yet. We employed Dr. D—, of Little Falls, but as the sick did not improve any, we employed Dr. G. M. A. F— of Little Falls, Minn. Dr. F— says there is no such disease here or in Little Falls, as diphtheria. There is another family in this town affected of a sore throat, and Dr. F— says it is not diphtheria; the head of the family says he knows it is diphtheria. Our Board was there to-day and quarantined the house, until they have the advice of some other physicians."

Jan. 22, Secretary replied: "In view of the fact that you have recently had cases of undoubted diphtheria in your town, and that the disease now existing is known to be infectious, I should treat all as diphtheria until you receive satisfactory evidence to the contrary, and I believe you are right in maintaining quarantine. I saw one case of *diphtheria* in Little Falls, recently. I should have visited other reported cases had time permitted, but it was reported to me that the other cases were the same as I saw. I have no doubt that the disease was there in other cases. Am very sorry that the Local Board take any chances. It is a great mistake. Am glad you are disposed to do otherwise."

Feb. 5, the T. C. reported:

"There is a new outbreak of diphtheria in this town, making the third family. There are 5 in the family, 3 children and the parents, all sick with diphtheria. Our Board have quarantined the house. The people are not very neat in this house. I would like if you could get a description of this case of Dr. B—, of Little Falls, Minn.; he is the physician we employed. The other two families are all well, and our Board took the quarantine off. One family was in poverty and we had to provide some new clothes for them. They could not wash in order to clean up unless we did so, as the children did not have clothes to change to wash, and the clothes they did have were rags, and most of which were not worth washing, those we burned. It took about \$35 to fit them out so as to clean up, (there were 6 children.) Do you think it was too much? Some of our neighbors think our Board did wrong in doing so."

Feb. 7, Secretary replied: "Yours of the 5th just at hand, and I reply immediately. I think you did right as to the clothing for the sick. It was not only a humane act but a measure of public safety on which you are to be congratulated. I advise that your Board take special care to investigate where this repeated infection came from."

## SCARLATINA.

THE following correspondence demonstrates the manner by which Chairmen of Boards of Health can aid this Board in hunting out infectious disease, and at the same time rendering their neighboring town valuable service.

Aug. 20, Dr. Catlin, H. O., Delano, reported cases of scarlatina in Minnetrista Tp., Hennepin Co., in the family of Mr. M——. Aug. 22, Secretary wrote to J. Wendt, Chairman Board of Health, for facts, to which he replied, Aug. 25, (received here Oct. 28.)

"I have received your letter and attended to it right off, but we found out that this family of Murphy does not live in our town; they live in Watertown, and therefore I have sent your letter to the Chairman of Supervisors in Watertown, and I hope he will do his duty and attend to the matter. Two children are getting better, but the third just came down with the same sickness."

Oct. 2, J. P. Akins, Chairman Board of Health, Watertown Tp., Carver Co. reported:

"Your notice, of scarlatina in the family of J. M——, dated Aug. 22, received Aug. 28, through Chairman Board of Health, Minnetrista Tp., Hennepin Co. I went immediately to the house and found five children sick with what they called scarlatina. The house was quarantined. The attack was light and the children got over it in a few days; was confined to the five children. Had no doctor except one or two visits from Dr. Chance, of Delano. Have ordered I. M—— to disinfect the house by whitewashing the walls and scrubbing the wood-work."

## ADULTERATIONS OF FOOD.—WHAT ARE THEY? HOW TO DETECT THEM? (Continued from November and December numbers.)

There are a few simple rules, which should be known to every housekeeper, for the selection of teas and coffee, and they are sufficient for ordinary use. Before examining a tea sample, remember that the customary frauds are to sell an inferior grade of tea for a better one, that all varieties of tea come from varieties of the same plant, and that color, fragrance, taste, form, and the time and results of steeping, (or brewing, as some call it,) are due to the age of the leaf, and the special treatment given it in preparing it for market. "Green" tea, is made of the younger leaves roasted over a wood fire very soon after gathering. "Black" tea is usually of older leaves, which are allowed to lie in a heap and ferment for ten or a dozen hours after picking and, after preparation, are dried slowly over a charcoal fire. All "colored" teas are faced with indigo Prussian blue gypsum, etc., which are harmless, and the fashion is dying out; "uncolored" being most in demand. The sample must not be too broken, or mixed with too much dust. Pour some boiling water on it in a tea cup. Note the amount and character of the fragrance, the flavor of the infusion should be delicate, and the color not too dark. The leaves unroll and you can see whether they are small and tender, or thick and tough; the proportion of stems and fragments, the foreign matter, and, if there is much "facing," the infusion will be cloudy and a powder collect at the bottom. More than forty per cent of the soluble matter should be extracted by the first drawing. Long boiling extracts the tannin, and coloring matters, and the prolonged heat drives off the essential oil, and effects the thein, which are the essentials of tea. The "tasters," whose judgment determines the price of whole cargoes, rely on the fragrance, the taste of the infusion, and the appearance of the leaf.



*Coffee*.—Buy the green berry, you can determine its quality when you come to roast, grind and infuse it. In buying the roasted berry you must remember that it has, likely, lost a large proportion of its aroma, and that coffee made from it will require longer boiling and more of the berry than if it had been roasted, ground and prepared almost as used. The roasted berry should be cooled rapidly and kept in closed fruit jars in a cool place till wanted.

*Ground Coffee* is almost of necessity a fraud. Even if it were pure, its aroma is almost gone. No one expects it to be pure, the question is usually one of economy and convenience. If you must buy such substitutes, here are a few rules which will enable you to tell how much is coffee and how much something else. *Chicory*, a dried, roasted and ground root, often mixed with a little caramel, (burned sugar,) is the commonest substitute. Carrots and other roots, peas, beans, and a great variety of other things, are also used, it is stated. Pure roasted and ground coffee, is solid, gritty, and a little oily to the touch; it will float on the surface of cold water. Chicory and some other substitutes sink very soon, leaving a dirty brown streak of color. Examine the coffee-grounds—you will find the coffee still quite hard and dark; chicory, beans, etc. soft, and more or less bleached out. It will be seen that both coffee and tea, owe their fragrance, flavor and value, largely, to the volatile oil which is developed in the process of curing of the tea and the "browning" of the coffee. Hence, both should be kept in close packages--nothing better than a fruit-jar. Their preparation should be by infusion with hot water rather than by boiling, for the simple reason that the flavor is lost by boiling.

*Cocoa and Chocolate*—Are varieties of the common product, made from the roasted and ground seeds of the tree *Theobroma cacao*, from which the oil called cocoa butter has been partly expressed. Coarsely ground or rather "cracked," it is called "cocoa nibs;" mixed with sugar, spices and starch, in varying proportions, it becomes "chocolate." "Cocoa shells" are the inner husk and are frequently used for a mild infusion. It is self evident that for safety the cocoa nibs would be selected. But analyses shows that the standard brands of chocolate are reliable. They are commonly used.

*Spices and Condiments*—Including the peppers, cinnamon, ginger, mace, cloves, mustard—a review of the latest analyses prove them all to be largely adulterated, but with vegetable substances, chiefly, and none endangering health.

They are chiefly wheat or other starch, tumeric for color, clay, plaster of paris, etc. There is no difficulty in getting pure articles, when people will cease judging these products by the chromo, or the wrapper, or their cheapness. None are so expensive but that the poorest can afford the best, and the sooner the retail trade draw a well defined line between their pure and sophisticated stock the sooner will popular confidence in them be restored.

The thrifty and careful house-keeper should have and use a spice mill, if possible, if not then insist that her grocer furnish the pure article ground.

Most of our Health Officers, and many other people, have a microscope. Here is a very interesting study, the microscopy of pure tea, coffee and spices, for the detection of their adulterations. The material is abundant and the expense is of leisure, time and study, than of money.

We have gone far enough in our review of the adulterations of articles of food to show that the essential thing in the way of legislation is to



enact a law such as has been suggested by the State Board of Health, for several years. "That all imitations, dilutions or adulterations of food products shall bear, marked plainly on the package, an exact statement of the fact, and that some authority in the State should be designated to determine the standards of purity for food products, and define what shall be legally meant by imitation, dilution, or adulteration, if the legislature does not define them in the act." This has been done in Massachusetts, and under the State Board of Health, the best work ever done in this country is the result.

(TO BE CONTINUED.)

#### DISEASES OF DOMESTIC ANIMALS.

**TUBERCULOSIS in DOMESTIC ANIMALS.**—We find the following extract from a German journal, in the *Annals de le Institut Pasteur*. The statistics include a sufficient number to be very valuable.

In the abattoir of Augsburg, in 1886, of 11,794 beeves slaughtered, 458 were found tuberculous, (3.8 per cent,) of whom 50 were from 1 to 3 years old; 165 3 to 6 years old; 244 more than 7 years old. In 130 animals, the lungs pleura, and peritonaceous were all tuberculous.

Of 22,989 calves, but 3 were tuberculous, (0.0073 per cent,) and the disease was in the kidneys.

The important conclusions from these statistics are that, *beginning with an exceedingly small per cent in calves*, the liability to tuberculosis in cattle increases with age, and that in animals affected, more than 28 per cent exhibit the disease in the lungs, pleura (lining membrane of the chest), and peritonæum, (lining membrane of the belly.)

We already know that cattle in city dairies suffer most. It is also well settled that the disease may be transmitted in the milk. Will give the latest conclusions hereafter.

**PLEURO-PNEUMONIA AMONG HORSES in IOWA.**—February 7, 1889, the *Pioneer Press* contained a statement that horses were dying from pleuro-pneumonia near Fort Dodge, Iowa. The Secretary telegraphed to Dr. Kennedy, Secretary of the Iowa State Board of Health, for facts. The following reply was received:

DES MOINES, February 7, 1889.

Dr. Hewitt, Red Wing,

DEAR SIR:—Your message of this date, to Dr. Kennedy, was handed to me for reply. No information, other than newspaper reports has come to this office, as to the prevalence of disease among horses, near Fort Dodge. I would say, by way of explanation, that the contagious form of *pleuro-pneumonia*, that has from time to time appeared among the cattle of this country, *is not communicable to the equine species*. Horses suffer from the sporadic form of *plenro-pneumonia*, but never from the contagious form.

Yours truly,

M. STALKER, V. S.,  
State Veterinarian.

MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, REP WING, Jan. 15, 1889.

Monthly Supplement to Report on Vital Statistics, }  
No. 5, November, 1888. }

(NOTE.—In the following table of death causes:

**Puerperal Diseases** includes *Puerperal Fever*, and the accidents and sequelæ of the puerperal state.

**Diarrhoeal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of all, over five years of age.

**Diarrhoeal Diseases of Children** includes intestinal diseases, under 5 years, during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tuberculosis Mesenterica* and *Hydrocephalus*, and *Tubercular Meningitis*.

**Infantile Debility** includes deaths, from unknown causes, of children under one year of age.

**Unclassified** includes those over 1 year reported as from unknown cause, and those which we have been unable to classify. Under this head are also included deaths from certain specified causes, not specified in the report following.)

*Deaths from all Causes*.—October, 1887, 1,213; October, 1888, 1,041; November, 1887, 1,039; November, 1888, 1,057.

See page 20 for comments concerning mortality from certain diseases.

MONTHLY STATEMENT OF BIRTHS—NOVEMBER, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO JANUARY 15, 1889).

GRAND TOTAL, 2427.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN-KNOWN
SEX.	Males .....	51.83	2427	1258	.....	.....
	Females.....	47.96	.....	.....	1164	.....
COLOR.	Unknown .....	.21	.....	.....	.....	5
	White.....	99.96	2426	1257	1164	5
	Colored.....	.04	1	1	.....	.....
CONDI-TION.	Unknown .....	.....	.....	.....	.....	.....
	Legitimate.....	99.43	2413	1249	1159	5
	Illegitimate.....	.53	13	8	5	.....
NO. AT BIRTH.	Unknown .....	.04	1	1	.....	.....
	Single .....	98.10	2381	1233	1143	5
	Twins .....	.90	46	25	21	.....
PARENT NATIVITY.	Triplets .....	.....	.....	.....	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
	Both American.....	26.82	651	342	308	1
	Both Foreign.....	54.64	1326	680	645	1
	Am'n Father—Foreign Mother...	4.94	120	62	58	.....
	Foreign Father—Am'n Mother...	11.00	267	144	122	1
	Unknown .....	2.60	63	30	31	2

## SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Month, 1957.																			Total of each Disease.
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Measles .....	-																			8
Scarlatina.....	■	■	■																	15
Diphtheria.....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	87
Croup.....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	24
Whooping Cough..	■	■	■																	14
Typhoid Fever....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	71
Erysipelas.....	■																			4
Puerperal Disease.	■	■	■																	13
Diarrhoeal Disease	■																			5
*Cholera Infantum	■	■	■																	24
Meningitis .....	■	■	■																	23
Rheumatism .....	■																			2
Cancer.....	■	■	■																	21
P thisis.....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	70
Other Tubercular Diseases.....	■																			6
Apoplexy and Par- alysis.....	■	■	■																	19
Insane .....	■	■																		13
Heart Disease....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	43
Bronchitis.....	■	■	■	■																26
Pneumonia and Pleurisy.....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	54
Enteritis .....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	36
Diseases of Urin- ary Organs .....	■	■																		7
Still Birth.....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	55
Inf'ntile D'bility } Premature Birth }	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	114
Infantile Convuls- ions .....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	36
Old Age.....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	85
Violent Deaths....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	74
Unclassified .....	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	78
Total Males .....																				
Total Females....																				
Grand Total.....																				

\*Diarrhoeal Diseases of Children, under 5 years, included under this heading.

[illegible]

**Disease Prevalence and Mortality in November of the  
years 1887 and 1888.**

	November, 1887.	November, 1888.	October, 1888.
Measles.....	5	8	5
Scarlatina.....	16	15	11
Croup.....	43	24	20
Diphtheria.....	110	87	95
Typhoid fever.....	75	71	118
Diarrhoeal dis. of children.	10	5	76
Phthisis.....	86	70	79
Bronchitis.....	24	26	15
Pneumonia.....	59	84	63

*Measles* nearly stationary; *Scarlatina* the same; *Croup*, about half the mortality of the same month last year; *Diphtheria*, a reduction of 20 per cent. as compared with November, 1887, and 8 per cent. as compared with October, 1888—an encouraging outlook. *Typhoid fever*, of this year, as of last, greatest prevalence in October. *Bronchitis*, a decided increase since the preceding month, about the same as last year. *Pneumonia*, an increase of more than one-third as compared with November, 1887, and greater than for preceding month.

With the December return we shall be able to compare the mortality for the completed years of 1887 and 1888.



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FEBRUARY, 1889.

WHOLE NO. 48

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF FEBRUARY, 1889.

### DISEASES OF MEN.

Diphtheria .....	{ cases, 91
	{ deaths, 16
Scarlatina .....	{ cases, 69
	{ deaths, 3

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for .....	11
Reported during the months .....	8
Killed .....	6
Released .....	3
Isolated .....	4

Remaining March 1st, 1889, isolated or not accounted for..... 10

NOTE.—Most of these are cases exposed, and isolated for further observation.

FOUR YEARS AGO next month we began the publication of PUBLIC HEALTH IN MINNESOTA, as the pioneer of what, in that short time has become, a stalwart body of similar publications, all with a common objective; all approaching it in a common direction, but by diverse ways. Ours in Minnesota, enter upon its fifth year next month, with no other promise than the record of the past.

DIPHTHERIA.—1889 begins with 75 deaths from this cause in January; 1888 began with 117 deaths in January; and 1887 with but 59; 1887 went out with 136 deaths in December, and 1888 with 86.

The general tables of mortality from diphtheria for 1887 and 1888 are nearly finished, and in our next number we shall begin to draw upon them for information as to the distribution, in time and place, and the other answers which we all have the right to expect from them. They have been very carefully collected, and revised by an elaborate system of checks, and by a large correspondence. No inquiry which seemed essential, or likely to throw additional light, has been neglected, and they give the vital sta-

tistics of over 1,642 deaths from diphtheria, distributed all over a State, at all seasons, in all classes, and for two consecutive years, more accurately and completely, than they have ever been given before. In addition we have the history of most of the outbreaks during which they took place. These are being compiled, and to them will be added, the meteorological condition which prevailed at the time they occurred.

**M**EAT AND MEAT INSPECTION.—The recent agitation of this subject, all over the country, has been occasioned rather by the business interests involved, than by Boards of Health, or those whose business it is to give warning of danger to health, and enforce laws enacted for its protection.

There is so much confusion and misunderstanding on the subject that we propose to state the established facts upon which the sanitary side of the question must be first judged.

But a very small proportion of the cattle killed for public consumption are sufferers from infectious or contagious disease. The most common and dangerous of these diseases, as respects the use of the meat for human food, is *tuberculosis*. It affects in far the largest proportion, dairy stock—domestic cows. Prof. James Law informs the writer: "Cannot give accurate statistics. Have seen eight per cent in State (N. Y.) Steers, more on plains than Texas steers, and always much more in dairy stock than in steers. Have seen thirty, fifty, and even eighty per cent, in some dairy herds." And Dr. Salmon, chief of the Bureau of Animal Industry, informs me that, "There are no accurate data as to proportion of different kinds of cattle affected with tuberculosis in this county; it is generally admitted that milch cows are most affected; thoroughbred breeding stock, next; native steers, least." They state the opinion of the most experienced observers.

In order of danger from this source, dairy stock and all cows, are by far the most to be feared, and should invariably be subjected to rigid inspection before and after slaughter. Next comes domestic steers; then western stock, and lastly Texas steers.

The liability to the disease increases, as the stock are removed from natural conditions of living and food, and, in cows, their exclusive use for milk supply, is a strong provocation, if conjoined to artificial feed, close quarters, and general insanitary condition.

*Lumpy jaw*, (actinomycosis) is another infectious disease of cattle which dealers tell me is common in western stock. It is

only within a few years that its infectious character has been recognized.

*Black quarler*, (anthrax) occurs frequently in isolated herds of young and well-conditioned stock in Minnesota. Many such cases have been reported and investigated by Local Boards and the State Board, in the last four years. But it is so rapidly fatal, and so evidently malignant, that in no case has there been any inclination other than to bury the whole carcass as rapidly as possible, and to avoid contact with it in any way. The flesh is discolored, and decay sets in rapidly.

*Texas fever*, does not effect cattle in this State, even if brought here by Texas cattle. So far as yet known, we are above that "fever line." It does affect domestic cattle, in Illinois, for example, and is well known at the stock yards there.

John Casewell, V. S., State Veterinarian of Illinois, informs me:

"It is impossible for any animal, suffering from Texas fever, to get slaughtered and get on the market. We keep an agent at the yards all the time and anything of a suspicious nature is held by him until I can make an inspection. All animals with lumpy jaw, received in the Union stock yards, are killed and sent to the rendering tank."

There are other infectious, (and some parasitic,) diseases of cattle but none which affect this question at present.

*But there are other conditions of health which affect the value of beef as food, than infectious disease.* Those of most common occurrence are, *bad conditions, ill defined sickness, fatigue, over-heat.* It is for these that inspection of domestic stock is very important. Any of them may cover tuberculosis, and fatigue, excitement, over-heating, and injuries, particularly in the warmer months, do seriously affect the healthfulness of their meat as food. This is the testimony of butchers, who often complain that they are compelled to buy such meat, and after what seemed reasonable care, find the meat lacking in brightness, sweetness, dryness, and keeping qualities. I believe it not unlikely that such meat is the occasion of many bowel troubles and obscure fevers commonly attributed to more apparent causes.

*Pork*—The hog is the victim of more sickness and of more infectious disease communicable to man than perhaps any other food animal. *Measles, trichinae*, hog cholera and other organic diseases, are so common that we rarely escape a few recognized at-

tacks of human disease from this source every year. Some foreign countries, e. g. France and Germany, forbid the import of pork from this country, professing to fear, chiefly, trichinæ. There is no evidence that we suffer as much as Germany where epidemics of trichinosis occur without parallel in this country. Let that be as it may, there is no doubt of the propriety of inspection of hogs, as a sanitary measure, in Minnesota.

*Sheep*—We have no records of infectious or other serious disease of sheep in the State, but elsewhere there has been trouble, and inspection should be the rule.

Should inspection be "on the hoof," a few hours before slaughter, or should it include that and inspection of carcass and contents, immediately after death? We answer unhesitatingly and positively *both*. The first to exclude evidently unfit animals, and the last, with the first, to discover, old age, ill health, sickness, injury, etc., and their causes.

This brief review of this important matter of the supply and consumption of fresh meat would be incomplete if it did not include the statement that in our State, and all the States for that matter, much stock and meat should be condemned as unfit for food; not only for infectious disease but for ill-condition, and all causes which affect healthfulness and *food value*. The meat of an old bull might not be unhealthy, but it is not fit for slaughter and sale as fresh meat, nor are all old, ill-conditioned or injured animals, except they *be sold for just what they are*. Our fresh meat supply is so abundant, and should be so reasonable in price, that we cannot adopt the low standard of other countries, where such meat as we demand for popular consumption, is a *luxury*, and an expensive one, too.

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## A DULTERATIONS OF FOOD. — WHAT ARE THEY? HOW TO DETECT THEM? (Continued from January number.)

*Vinegar* is an important condiment, and owes its value, chiefly, to the amount of *acetic acid*, which it contains, but its fragrance and flavors are due to the various ethers which are developed in its production from good wine and cider. For these, among other reasons, cider vinegar is preferred in this country. Any form of sugar or alcohol, by the aid of the fungoid plant, known to housekeepers as mother of vinegar, can be made to yield vinegar. The usual adulterations, in order of frequency, are water, by all odds the most common, coloring and flavoring matters, burned sugar, called *carmel*, capsicum, and common salt.

*Metals*.—Copper, lead, zinc, tin, arsenic, are due to the dissolving power of vinegar on the metal surfaces of containers. They are very rare in this country, except copper, which has been found in pickle vinegar, added apparently to



improve color. The lesson is obvious. Use no vinegar for table purposes which has been put to other use before.

*Copper is easily detected*, by leaving a bright knife blade or needle in the vinegar for a little while, when if copper is there it will leave a deposit of the metal on the steel.

*Salt* is easily detected by the solution of nitrate of silver. A few drops in a half ounce of the vinegar throws down a heavy white cloud if salt is in any amount.

*Hydrochloric acid* is detected in the same way.

*Sulphuric acid*.—The common test by Barium chloride is not always reliable, but if it gives a very heavy white cloud, used as the nitrate of silver is used, an excess of sulphuric acid is present.

*The most common thing is too much water*. Taken with the other tests here suggested, or even without them if the record is below the average 1019, *specific gravity* is an available means of detecting this fraud, and the urinometer, used by physicians, will serve, if none other is available. The best vinegar tests as high as 1022°, good 1020°, 1019°, the weakest 1015°, below which water has surely been added.

*Color*.—Pure vinegar, from wine or alcohol, should be almost colorless. From cider it is a light amber, and from molasses or inferior sugars, it may be quite dark. Commercial vinegars are colored with caramel, as are many alcoholic liquors, because people demand a color, not because it is necessary or useful.

*Total solids*, easily obtained by evaporating a known quantity of vinegar on a water bath, (or over a boiling tea-kettle,) till the residue ceases to lose weight, give some clue to the composition of a suspected sample. If a little alcohol is boiled with the residue then poured off and evaporated it will decide the presence of burned sugar, proving it if the residue of the evaporated alcohol is dark colored and bitter to the taste, and which would also detect capsicum, if present.

*The metals*.—An old but sufficient test for the presence of copper has already been suggested.

(TO BE CONTINUED.)

#### INFECTIOUS DISEASES OF MEN.

THE RELATION OF MEMBRANOUS CROUP TO DIPHTHERIA.—NORTHFIELD, Minn., December 10, 1888.—I have to report six cases more of diphtheria, and three of measles. As you will see by death report there was a case of membranous croup, in family of Henry B—, attended by Dr. P—. It has never been customary, or obligatory, heretofore in Northfield, for physicians to report, or for our Board to act, on cases of membranous croup. So this was not reported or isolated, and a public funeral was held. Following this soon another case occurred at A.'s, which I attended, and in which case there was not a particle of membrane in sight any of the time until death, and was as straight a case of membranous croup as any one would want. In three or four days a case of diphtheria come down in this family and died, and three or four days ago another case. Thursday, December 6, diphtheria appeared in family of Andrew B—, a brother of Henry, and from then to to-day (10th) three more. The baby in this family, six weeks old, dying three weeks or so ago, from meningitis following otitis media. Now, I am satisfied that membranous croup and diphtheria are one and the same disease, and our Board of Health has issued it fiat accordingly, and shall demand immediate notification from physicians as for diphtheria, and as rigorous isolation, etc. All these cases appear to me to have originated from these cases of membranous croup.



I should like your opinion, first, as to the contagiousness of membranous croup; and second, if your Board mean it to be included among such diseases; and third, if you consider it identical with diphtheria; and fourth, if we can compel physicians and families to report it at once, and use precautions when they do not consider it a contagious disease, as I understand one or two of our physicians do not. I have based our action on the authority of Pepper, Mackenzie and others, and my own recent experience. I shall talk about this at our next Board of Health convention, if I have a chance.

Very truly

W. A. HUNT, M. D., H. O.,

Northfield, Minn.

To Dr. Hewitt.

I might add that while Andrew B—— and A.'s are neighbors (on opposite sides of street,) they had not the least communication during, or immediately before, the first case in A.'s family, but had been at their brother's Henry B——.

Dr. B—— reported a case of a five-year-old boy in the family of M. W——, Thursday 6th. This boy had not been out of house for two weeks, previously being sick with slight catarrhal fever. They live on other side of river, three-quarters of a mile from other families above named, and no intercourse. Father, a carpenter, had a sore throat while working in a cellar, and wife followed, and then the boy. I have not had time to investigate origin of this case more fully. The two cases of membranous croup above, originated in children who did not attend school and little exposed to contagion from others.

The Secretary replied calling attention to the diphtheria circular, which treats croup as diphtheria unless proved the contrary.

*Diphtheria.*—*Traverse, Nicollet Co., December 3, 1888, Jacob E. Leonard, T. C., reported:*

"The dreadful disease, diphtheria, has suddenly made a sad havoc in one family in this town, named S. L——. Five children, from two to seventeen years, have succumbed between the sixth and twenty-second days of November last. Two grown boys, affected with the same disease, in the same family, are finally recovering, under the careful daily attendance of Doctors Collins and McIntyre, from St. Peter. All honor and thanks to these kind gentlemen, and to the supervisors of the town, for all precautions taken to confine the disease. The premises are yet carefully quarantined; the neighbors have been sending miscellaneous articles to the family, without allowing any entrance, whatever. To the timely warnings and strict orders of the Board of Health, I attribute the non-spreading of the disease. No other family was affected, and the balance of this town is enjoying good health, not suffering, at least, from any contagious disease. This section is now favored with the most favorable weather—this third day of December, 1888."

*Diphtheria.*—*Watertown, Dr. A. E. Shannon, H. O. reported Dec. 23, 1888.*—"Two families by the name of T——, have diphtheria. One family, who have lived here some time, has four cases, the first of which was taken sick a week ago last Friday; the remainder last Tuesday and Wednesday. The other family moved up here from Anoka about eight days ago, and stopped over night with his brother, and three of his family were taken sick last Tuesday and Wednesday, and one died on Sunday. I was not called to see any until Sunday, (yesterday) in the morning. The remainder are under quarantine and are doing nicely; but some members of the first family attended school in the village after the first case came down. Each family lives about a mile out of Watertown, one on one side of the village, the other on the opposite. The case in Mr. J.'s family, I reported some time ago, is well."

December 29, 1888, Health Officer reported:

"Two new cases of diphtheria have made their appearance since I wrote you the fore part of the week: one in the family of Mr. L——, about a mile south-east of the village, which they caught by the old folks going over to see the family I reported at my last writing; the other I cannot trace anywhere, as one of the little ones was the first that took it, and had not been away from home anywhere. In the first family there are only two small children, one seven years, that has the disease, the other fourteen years, a girl working for the fam-

ily. In the second family, who live in our village, there are five children, two grown up young people and three smaller ones, who have the disease in a mild form. Have been sick for from four to six days. I have posted contagious disease cards on all; but the trouble is they wont heed the quarantine, but will visit one another on the sly; and that is the way it spreads."

*Diphtheria—Ellsworth Tp., Meeker Co.—Infection Imported from Bloomington Tp., Hennepin Co.*—(See PUBLIC HEALTH, No. 10, for report of diphtheria in Bloomington.) January 12, Rudolph Krussow, C. B. S., reported: "Diphtheria has broken out in the village of Greenleaf. One death Christmas day, a girl nine years old, and two more are sick. I called a meeting and organized, and appointed John McStott (member of Local Board of Health) Health Officer. We then went to Greenleaf and put a quarantine notice on the house, posted a guard, and got Dr. E. A. Baum for them." January 9, Secretary wrote: "I am obliged for yours concerning diphtheria. Herewith I send you blanks and circulars for distribution. Be careful as to isolation and disinfection. You understand that your Board are not responsible for medical treatment, except in cases of poverty, under Sec. 28, Chap. 132, Laws of 1883. Sent file of diphtheria circulars and copies of law and blanks." January 10, C. B. S. reported: "The diphtheria is still in Greenleaf, but it don't spread any further, because we keep them close, and they are kept from everybody, and we, the Board, are doing all we can for them to make them comfortable. There are five now sick in this family, and one more death, a boy six years old, buried the same day. Dr. Baum says he thinks the others will come out all right. The disease was brought here by a young lady from below St. Paul, a place where they had diphtheria last fall. She must have carried the infection in her clothing, for she had been home but about three weeks when a sickly girl, 9 years old, became sick with diphtheria and died in a few days. How long shall we keep the family isolated, and what shall we do with the house and clothing?" January 12, Secretary wrote: "I am obliged for yours concerning diphtheria in your town, and trust that the energetic action of your Board will prevent the spread of the disease. The inclosed marked circular will answer your inquiries. If you will kindly learn and inform me of the name of the young lady suspected to have brought the infection into your town, what place she came from, date, where she lived, (name of family,) I will endeavor to trace the matter." January 21, C. B. S. wrote: "I am obliged for the circular. Those first sent me were lost by my mail carrier. The sick are getting along finely. One new case came down January 15th, but he is getting better. The young lady mentioned is Lizzie Magraw. She came from Bloomington Tp. about December 1st. The name of the family with whom she lived there, is Wm. Harrison. She had diphtheria there, and says the Board of Health told her she might go home." January 31st, Secretary wrote: "You will notice in the last issue of PUBLIC HEALTH an account of the diphtheria outbreak in Bloomington Tp., Hennepin Co., and in the family of Wm. Harrison in whose family the young lady who is supposed to have carried the infection to your town, resided. This case is one of the oft repeated lessons, that too much care cannot be taken in the disinfection of persons and premises, especially clothing, after the termination of an attack of infectious disease. I hope that your Board and other Boards will profit by this experience. I have notified the Board at Bloomington of these facts."

*Diphtheria—Aitkin (V. and Tp.) Aitkin Co.*—November 24, Samuel Hodgen telegraphed Dr. Hand, President State Board of Health: "Send competent physician here to-day, sure. Don't fail. Diphtheria. Answer." November 24, Dr. Hand replied: "We have no physician to send. Have your Health Officer report facts at once," and referred the matter to Secretary. Same date, Dr. C. Graves, H. O., reported to Secretary: "Diphtheria epidemic in and around Aitkin—nineteen cases and three deaths so far, and one death from doubtful cause. At present only one serious case. We think we have the disease pretty well under control." November 26, Secretary replied: "I send file of diphtheria circulars and copies of the law. I have also written to the township Board of Health, advising their co-operation with your Board in this matter, and sent them circulars, etc. *Strict isolation and thorough disinfection* should be enforced." He also advised the Board of Health of Aitkin Tp. to

co-operate with the village Board, under Sec. 14, Chap. 132, Laws of 1883. Same date he again wrote H. O.: "Have just received letter from Dr. Hand, in which he states that Mr. Knox informs him that diphtheria is not properly quarantined in your locality, and that neighbors are going from one house to another. That the people are much alarmed and that Messrs. Hodgen and Howe, (members Local Board of Health,) authorized him to get Dr. Hand to send a competent physician to take charge, and that they would see that his bill was paid by the county. My advice in the matter is that if your Board and citizens desire a consulting physician in the case, that you allow it. Keep me informed every day or so, and, if necessary, I will come up." Same date, Secretary wrote Samuel Hodgen: "Dr. Graves reports to me to-day that he believes your Board have the diphtheria outbreak under control. If your Board are not satisfied with your medical adviser, and you desire counsel, I advise you to select some one of your own accord to consult with Dr. Graves, as you would be better satisfied with a physician of your own selection than with one I should send, probably. I will come myself if the circumstances demand it. Have written to Dr. Graves." November 28, H. O. reported: "Complaints of inefficiency, etc., entirely uncalled for, and made by a few who will not offer to assist in any manner whatever. There have been about thirty cases and five deaths since November 1. At present, six cases, all doing well. No new cases here for ten days in new families. Infected families quarantined. Statements that citizens are alarmed not true. Local Board of Health and majority of citizens are well satisfied with what has been done. Infected families satisfied. All cases thoroughly investigated by Local Board of Health. I am willing to employ other physicians to assist or consult at any time when it seems proper or necessary. Last cases, nurse sick November 24, and a boy seven years old in family where three other cases taken sick November 26th. Both doing well. In some cases difficult to keep well members separate from sick, as houses are small and they eat, sleep and live in same room. In all cases where we could we removed children to safe quarters."

December 8, Health Officer reports: "Disease under control. No new case since November 24. But one death since last report. Am obliged for encouragement given by Secretary." Referring to local complaints, he writes: "The Board know when they need help and where to apply for it. If complainers would assist the Board, instead of circulating false reports and causing unnecessary alarm and discontent, they would accomplish better results. We are watching persons exposed and taking other measures to prevent spread of the disease."

December 12, Health Officer reported: "Another death and five new cases in village. Local Board of Health, when possible, removed the sick in a family from the well. Thoroughly placard and guard infected houses, and assign to each a special officer. Distributed circular calling attention to law and penalty. Citizens are much more helpful than heretofore. New cases less severe and the general situation hopeful."

December 16, Health Officer reports: "Single new case and no deaths since last report. The sick doing well. Some mild cases must have occurred which have not been reported. Popular co-operation more cordial and better."

December 27, Health Officer reported: "Three new cases since December 16. None severe and doing well. Circulars on diphtheria have been of great service and saved the answering of many questions."

December 30, Health Officer reported: "One new case since last report, the only one sick at present. No deaths." January 2, Health Officer reported, "No cases since last report." Wrote for statement of usual expenditures for physicians, nurses, etc., for washing clothing, bedding, and cleaning house after death or recovery. "Are having trouble with County Commissioners about paying bills." January 9, Secretary replied: "No fixed allowance for such services are in incurred under Sec. 28, Chap. 132, Laws of 1883, by order of Local Board." January 12, Health Officer reported, "Single mild case since last report. All others recovered. Having difficulty with County Commissioners, who return certain bills reduced and others rejected. L. B. of H. claim bills just and proper. Commissioners in no position to judge. Some parties will not accept pay unless in full." January 22, Secretary referred this letter to the Attorney General as one of a series of similar complaints, and asked advice.

MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, Feb. 15, 1889.

Monthly Supplement to Report on Vital Statistics, }  
No. 6, December, 1888.

(NOTE.—In the following table of death causes.

**Puerperal Diseases** includes *Puerperal Fever*, and the accidents and sequelæ of the puerperal state.

**Diarrhœal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of all, over five years of age.

**Diarrhœal Diseases of Children** includes intestinal diseases, under 5 years, during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tuberculosis Mesenterica* and *Hydrocephalus*, and *Tubercular Meningitis*.

**Infantile Debility** includes deaths, from unknown causes, of children under one year of age.

**Unclassified** includes those over 1 year reported as from unknown cause, and those which we have been unable to classify. Under this head are also included deaths from certain specified causes, not specified in the report following.)

*Deaths from all Causes*.—November, 1887, 1,039; November, 1888, 1,057; December, 1887, 1,182; December, 1888, 1,162.

See page 24 for comments concerning mortality from certain diseases.

MONTHLY STATEMENT OF BIRTHS—DECEMBER, 1888.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO FEBRUARY 15, 1889).

GRAND TOTAL, 2394.		PER CENT.	TOTAL.	MALES.	FEMALES.	UNKNOWN.
SEX.	Males .....	52.05	2394	1246	.....	.....
	Females.....	47.37	.....	.....	1134	.....
	Unknown .....	.58	.....	.....	.....	14
COLOR.	White.....	100.00	2394	1246	1134	14
	Colored.....	.....	.....	.....	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
CONDITION.	Legitimate.....	99.54	2383	1240	1129	14
	Illegitimate.....	.46	11	6	5	.....
	Unknown .....	.....	.....	.....	.....	.....
NO. AT BIRTH.	Single .....	98.28	2453	1225	1113	14
	Twins .....	.59	38	19	20	.....
	Triplets .....	.13	3	2	1	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY.	Both American.....	24.94	597	322	272	3
	Both Foreign.....	56.06	1342	694	643	5
	Am'n Father—Foreign Mother....	4.84	116	52	63	1
	Foreign Father—Am'n Mother....	12.32	295	158	135	2
	Unknown .....	1.84	44	20	21	3



SUMMARY OF RETURNS OF DEATHS FOR THAT MONTH FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Month, 1162.																			Total of each Disease.
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Measles .....	<div></div>																			17
Scarlatina.....	<div></div>																			15
Diphtheria.....	<div></div>																			84
Croup .....	<div></div>																			31
Whooping Cough..	<div></div>																			14
Typhoid Fever....	<div></div>																			51
Erysipelas.....	<div></div>																			7
Puerperal Disease.	<div></div>																			24
Diarrhœal Disease	<div></div>																			0
*Cholera Infantum	<div></div>																			19
Meningitis .....	<div></div>																			39
Rheumatism .....	<div></div>																			2
Cancer.....	<div></div>																			22
Phthisis.....	<div></div>																			91
Other Tubercular Diseases.....	<div></div>																			10
Apoplexy and Paralysis.....	<div></div>																			11
Insane .....	<div></div>																			12
Heart Disease....	<div></div>																			36
Bronchitis.....	<div></div>																			48
Pneumonia and Pleurisy.....	<div></div>																			89
Enteritis .....	<div></div>																			31
Diseases of Urinary Organs .....	<div></div>																			16
Still Birth.....	<div></div>																			67
Infantile Debility } Premature Birth }	<div></div>																			115
Infantile Convulsions .....	<div></div>																			45
Old Age.....	<div></div>																			99
Violent Deaths....	<div></div>																			71
Unclassified .....	<div></div>																			96
Total Males.....																				
Total Females....																				
Grand Total.....																				
*Diarrhœal Diseases of Children, under 5 years, included under this heading.																				

\*Diarrhoeal Diseases of Children, under 5 years, included under this heading.



OF THE SECRETARY OF THE STATE BOARD OF HEALTH, (UP TO FEBRUARY 15TH, 1888).

Per cent. of deaths during the month.	SEX.		SOCIAL STATE.		AGE.																	NATIVITY.				PARENT NATIVITY				Localities Invaded Counties.						
	Males.	Females.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City. Village or Tp.	Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.	Both Foreign.		American Father.	Foreign Mother.	Foreign Father.	Foreign Mother.	Unknown.	
1.46	10	7	10	7	...	...	2	3	1	2	...	1	1	1	1	...	...	...	...	...	...	...	6	3	...	1	...	1	7	...	...	...	...	14	13	
1.29	3	12	3	12	...	...	1	4	2	1	...	1	1	1	...	...	...	...	...	...	...	...	1	3	2	1	...	3	4	2	...	...	...	...	10	9
9.90	56	59	55	59	1	...	9	5	7	9	...	1	1	1	1	...	...	...	...	...	...	...	32	16	6	2	...	13	37	...	...	2	...	1	10	
1.20	4	10	4	...	...	...	3	7	9	8	...	14	4	6	3	...	...	...	...	...	...	...	27	18	7	4	3	17	32	...	...	5	1	...	...	
4.48	36	21	12	12	1	2	...	...	...	...	...	3	5	...	13	4	5	...	3	...	...	1	3	4	6	22	1	3	29	...	...	...	4	...	27	
.60	4	3	2	2	1	...	...	2	...	...	...	3	6	...	3	6	1	2	...	1	...	...	3	1	1	3	1	2	13	...	...	1	...	7	7	
2.07	24	2	22	...	...	...	...	...	...	...	...	2	11	6	4	...	...	...	...	...	...	...	1	1	7	16	...	2	15	...	...	7	19	17		
1.13	13	13	...	...	...	...	7	5	1	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	3	...	...	1	10	1	...	...	1	...	...	
3.36	19	6	16	2	1	...	4	2	2	1	...	1	1	...	2	1	1	1	...	...	...	9	2	4	4	...	4	4	11	...	1	3	10	10	...	
.17	1	1	1	...	...	...	8	4	1	1	...	1	1	...	2	...	1	1	...	...	...	...	12	5	2	1	...	5	10	...	3	2	23	21	...	
1.90	8	14	5	2	1	...	...	...	...	...	...	...	...	...	1	2	1	3	2	...	...	...	...	...	...	3	5	...	7	...	...	1	2	16	13	
.83	41	50	22	17	4	2	...	1	1	...	1	...	2	2	16	7	5	5	...	...	...	...	4	6	13	23	2	5	29	...	1	...	6	...	60	
.86	6	5	1	...	...	...	3	1	...	2	...	...	...	...	2	...	...	...	...	...	...	...	4	1	1	...	...	4	2	...	...	...	...	...	...	
.94	7	4	2	5	...	...	...	...	...	...	...	...	...	2	...	3	2	1	...	...	...	...	4	2	1	...	...	2	3	...	...	...	...	8	8	
1.03	10	2	2	6	...	...	...	...	...	...	...	...	...	2	...	3	3	...	1	...	...	...	1	3	3	6	...	...	...	...	...	...	...	10	...	
3.09	22	5	13	2	2	...	...	...	...	...	...	4	...	...	3	5	2	7	...	1	...	...	...	1	7	12	2	2	13	1	...	6	...	2	2	
4.12	26	14	3	8	2	...	1	...	...	...	...	1	...	2	3	2	...	...	...	...	...	...	1	2	4	7	...	3	9	1	...	1	21	17	...	
7.06	46	22	30	1	1	...	15	6	2	...	1	...	...	...	1	...	...	...	...	...	...	...	14	7	4	1	...	6	14	1	...	1	23	16	...	
2.67	16	9	6	...	1	2	...	1	...	...	3	2	2	3	...	2	2	2	...	...	...	...	16	7	8	12	...	9	27	1	1	...	7	59	36	
1.37	10	4	6	...	...	...	...	1	...	...	...	1	2	1	3	1	...	...	...	...	...	...	3	4	3	5	...	2	8	1	...	4	20	18	...	
5.76	44	23	44	...	...	...	44	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	44	...	...	...	...	8	31	2	2	...	1	11	8	...
9.90	65	50	65	...	...	...	63	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	58	6	1	...	...	22	36	4	3	...	...	...	...	
3.87	33	12	33	...	...	...	23	3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	27	3	3	...	...	8	19	2	3	1	...	...	...	
8.52	43	51	3	15	32	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	19	26	1	7	21	...	...	20	...		
6.11	59	31	25	2	1	...	1	...	...	1	5	1	1	18	12	7	4	5	1	...	...	...	...	1	16	32	1	8	26	...	...	17	84	43		
8.26	48	26	20	1	1	3	2	5	1	1	3	...	1	3	5	3	9	8	...	...	...	...	10	8	7	18	5	5	31	1	...	...	2	10	30	
...	48	15	27	5	1	...	1	3	1	...	1	4	3	...	4	5	8	10	8	...	...	...	6	5	8	25	4	5	32	...	...	1	9	...	...	
...	635	432	153	39	11	199	36	29	14	8	30	12	20	65	43	35	38	44	36	16	10	251	74	105	189	16	129	388	16	21	81	...	...	...	...	
...	527	328	139	58	2	139	32	20	16	7	33	19	24	58	32	34	23	28	31	23	3	185	79	60	103	11	106	318	11	25	67	...	...	...	...	
...	635	527	760	202	97	133	338	68	49	30	15	63	31	123	75	69	66	72	67	39	13	436	251	194	352	27	235	706	27	46	148	...	...	...	...	

## MINNESOTA.

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### Disease Distribution and Mortality in December 1887 and 1888, and November 1888.

	Dec., 1887.	Dec., 1888.	Nov., 1888.
Measles.....	5	17	5
Scarlatina.....	18	15	16
Croup.....	43	31	24
Diphtheria.....	136	84	87
Typhoid fever.....	53	51	75
Diarrhoeal dis. of children.	16	19	10
Plithisis.....	106	91	86
Bronchitis.....	24	48	26
Pneumonia.....	77	89	59

*Measles* increase in distribution and mortality; November, 1888, 8 cases in 7 localities and 7 counties; December, 1888, 17 cases in 14 localities and 13 counties. *Scarlatina* diminished prevalence and mortality; *Croup* the same. *Diphtheria*, a very encouraging reduction in mortality, (December, 1887, 136, December, 1888, 84,) and a decline from preceding month (November, 1888, 1887.) *Typhoid fever*, nearly same as December, 1887, but a marked reduction in last month. (November, 1888, 71 cases in 30 localities and 23 counties; December, 1888, 51 cases in 27 localities and 22 counties.) *Bronchitis*, a marked increase in mortality, double that of December, 1887 or November 1888. (November, 1888, 26 cases in 17 localities and 16 counties; in December, 1888, 48 cases in 23 localities and 16 counties.) *Pneumonia*, marked increase in mortality and wider distribution.

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

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VOL. V. NO. 1.

MARCH, 1889.

WHOLE NO. 49

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF MARCH, 1889.

### DISEASES OF MEN.

Diphtheria.....	{ cases, 100
	{ deaths, 19
Scarlatina.....	{ cases, 82
	{ deaths, 2

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	10
Reported during the months.....	3
Killed.....	1
Released.....	0
Isolated.....	3

Remaining April 1st, 1889, isolated or not accounted for..... 2

NOTE.—Most of these are cases exposed, and isolated for further observation.

## HERE ARE SOME NOTEWORTHY FACTS AS TO SANITARY ORGANIZATION IN MINNESOTA.

The State contains 76 organized counties, 218 cities, villages, and boroughs, 1,298 townships. (These figures are constantly changing by the organization of new villages and towns.) Of the 218 villages, cities, and boroughs, 212 have filed notice of the organization of a Local Board of Health; of 1,298 townships, 1,181 have filed notice of the Board elected, March 12, 1889, leaving 117, which though organized, have yet to make such report. These are reporting daily, so that all will have complied with the law in a few days more.

Proportion of chairmen re-elected: In 603 towns, of those reported, the chairman was re-elected, being 51 per cent of the whole number.

Proportion of clerks re-elected: In 933 cases the town clerk was re-elected, which is 79 per cent of all towns reported.

The proportion of old chairmen re-elected is smaller than of town clerks by 28 per cent. It is very encouraging to note the

remarkable promptness with which the annual reports by town clerks are now made.

*This year the election of township Boards took place March 12, and by March 29 we had received notice from 1,037 clerks, representing nearly 80 per cent of the total number of organized towns in the State.*

---

MEASLES SEEMS INCREASING RAPIDLY IN SEVERITY AND MORTALITY, or, it would be more accurate to say, it is more frequently followed by fatal secondary affections, notably bronchitis and pneumonia. The returns would be larger if all those secondarily fatal cases were credited to their real cause:

*Mortality by years:* 1887, 185; 1888, 209.

*Mortality by first quarter of each year:* 1887, 48; 1888, 29; 1889, 75.

*Month of greatest mortality:* 1887, May, 37; (March, 27; April, 32.) 1888, May, 56; (March, 15; April, 28.) 1889, February, 21; March, 28.

If one were to judge by the statistics, we may expect increased mortality in April—next month.

We are justified in asking Health Officers and Local Boards to use especial care to isolate affected children; to refuse them permission to go to school till entirely well and disinfected, and to watch the schools for new outbreaks.

*Warn parents of the danger to the child of any exposure to cold and damp, till entirely recovered.*

---

HOW SCARLATINA INFECTION WAS CARRIED TO THE CHILD OF A HEALTH OFFICER, WITHOUT HIS KNOWLEDGE, BUT WITH FATAL RESULT, is strikingly shown by the pathetic but important report of Dr. Chilton, Health Officer of Howard Lake, Wright County. It is published in the hope that so strong a demonstration of the need for *strict isolation of infected persons and for disinfection of the clothing of all in any way exposed to infection*, may be made known to every one, and furnish another reason for *strict and efficient control of such diseases by Local Boards of Health.*

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MEASLES.—A barber, convalescent from an attack, gives the infection to a customer and he to others. See the report of Dr. Walker, Health Officer of Excelsior.



WE take from the *Wabasha Herald* a stirring call by the Board of Health of that city. It has an unmistakable flavor and promise of efficient work. The example is a good one which we shall be glad to report "thoroughly infectious" and the infection widely distributed.

SUSPECTED MAD DOG.—"RABIES"—DON'T KILL BUT ISOLATE THE SUSPECTED ANIMALS.—The occurrence of several cases of supposed Rabies, in other States, has occasioned unusual watchfulness in ours, and reports are coming in with requests for advice.

Health Officers and Local Boards will do well to insist that, when possible, dogs suspected to be "mad" be *safely isolated in quiet, and properly cared for till the case is beyond doubt*. In this way only can the truth be known; the horror of impending disease be put to the test of experience, and, in the vast majority of cases, proven to be a delusion. Animals so isolated should be under the care of the Local Board of Health.

EXPENSE OF SICKNESS AND BURIAL IN INFECTIOUS DISEASE.—Despite all we have written on the subject, many still insist that in cases of infectious disease the Local Board of Health must furnish medical attendance, provide nurses, and provisions, attend to burial of victims, etc., even where the family are abundantly able to care for themselves. In these respects, and if the disease were not infectious, this aid would not be called for. As an illustration of the extreme to which this opinion is carried, and a sad one too, the following letter, and reply of the Secretary, is published. April 13, the Clerk of a town in the east-central part of the State, wrote: "Will you please give me information on the following: A woman died of diphtheria in this town night before last, and the family reported the case to our Local Board of Health, and asked them to take and bury the body. The Board visited the family, but refused to bury the body, or have anything to do with it. In this family is the woman's father, husband and brother, all able bodied men. The father is in good circumstances, and able to pay the expense of burial, but he refuses to do anything. Can this expense be thrown on the County?" Immediately on receipt, April 14th, the Secretary wrote:

"Your letter at hand. I am shocked and surprised at its contents. As you describe the circumstances, the family have no claim upon town or county for poor relief, and it is as much their duty to provide for the burial of this woman dead of diphtheria, as if she had died of any other disease, and it is the duty of your Board to isolate the family, and to see that the burial is immediate and private. You will keep the family isolated from association with others until, by thorough disinfection, all danger to themselves, or others, is removed. They should be kept isolated at least three weeks after the burial of this body. You understand that by isolation in this case, is meant simply non-intercourse with other families. They can work about their own farm as much as they please.



If you have been compelled to bury the body by the refusal of the family to attend to it, I advise that you consult the County Attorney, or other lawyer, and bring immediate suit for expense incurred in the burial of the body, or for any penalty which the Penal Code may provide for gross violation of public order and common decency. Report the action which you take in the matter, and make an example of this case, if need be."

## HOW THE INFECTION OF SCARLATINA MAY BE CARRIED AFTER A TRANSIENT EXPOSURE—A HEALTH OFFICER "PRACTICES WHAT HE PREACHES."

HOWARD LAKE, MINN., April 5, 1889.—*Dear Doctor:* On Thursday night, February 21st, a messenger came with a sick call about ten miles in the town of Stockholm, stopping on the way in a house where there were five cases of scarlatina. He had been visiting, and had been with those cases of scarlatina. He remained in my house for half an hour or more, sitting on the lounge (being a very cold night). My little boy was in the habit of sleeping on the lounge more or less every day, and as usual, on Friday 22d, in the afternoon, he took his usual day nap on the lounge. On Sunday afternoon he came down with scarlatina. One week before he had played all day with a little boy from Minneapolis, who had had scarlatina last fall, and I have since been informed that the necessary disinfection and care had not been taken after recovery; but the first seems to be the most reasonable source of the contagion. On Sunday at noon my little boy seemed unusually well, and ate a hearty dinner. He went to Sunday school at 3 p. m., and was stupid while there. He vomited freely at 5 p. m. On my return home (I had been in the country all afternoon) at 6 p. m., he had a temperature of 100. He was put to bed and isolated, and given some medicine. Next morning temperature was normal, and felt better. At noon the temperature was 101, and some eruption over region of stomach. By evening eruption was well out over the entire body, with a temperature of 105. The eruption was intense, and remained so until death, which occurred on the fifth day, dying from heart failure. Throat never was bad. He was saturated with the poison in the extreme. I have four other children; they were kept away, and were not allowed to enter the room or come near. My wife and I were alone with the case until the night before he died; then a lady who had no children, came to our relief. One other lady and two gentlemen, none of them having children, assisted us on the day (afternoon) of the death, and at the funeral early next morning, which was strictly private, none participating except those mentioned, the undertaker and sexton of cemetery. After funeral the rooms (two) in which the case had been, were very thoroughly fumigated. Carpets and all clothing was scalded in zinc sulphate solution. The floors and walls were washed with a strong solution carbolic acid; also with a 1 in 500 solution bichloride mercury, after which the doors and windows were thrown open and the rooms aired and thoroughly ventilated for five days. All who had come in contact with my little boy, were kept out of school for two weeks, and no Sunday school was held in the church on the next Sunday. My children, (four living,) did not contract the disease, and were not allowed to mingle, or in any way be, with other children for one month. We have many friends here and the little boy was a favorite with everybody, and our neighbors and friends would come to the house and beg and plead to be let in, but I said, "No, we must stop this trouble right here," and asked them to go away and not return, unless I sent for them. It was very trying; yet I had a duty to perform, although it was done in great sadness and was very trying. I wanted to give my friends and neighbors a good example and show them that I meant to practice what I have been preaching for the last eight years. I had cases in Stockholm reported to Local Board. What they did, I do not know. Hoping that this may be of service to you, I remain respectfully,

E. Y. CHILTON, M. D., H. O.

**"MEANS BUSINESS.—THE BOARD OF HEALTH HAS SOMETHING TO SAY TO YOU.—**To the householders, occupants of stores, warehouses, shops and other buildings: You are hereby notified that in pursuance of an order of the Board of Health, you shall, within 30 days from the date of this notice, remove from your premises, and streets and alleys adjacent, all nuisances, sources of filth, cause of sickness, or danger to public health. Every owner or occupant of premises not complying with this order, shall find that the legal penalties will be promptly and firmly enforced. The law requires the Health Officer to make once in each year, in the month of May, or oftener if necessary, a thorough sanitary inspection of the city, and to report the result to the State Board. The penalty for neglect or refusal of the health officer to comply with the law is a fine of not less than \$25, nor more than \$100, and disqualification from holding the office as a member of the Board of Health. Boards of Health will hereafter be held to a stricter accountability than heretofore, and they will have no discretion other than to enforce the penalties upon those who wilfully violate the requirements of the law. The annual inspection this year will be made between the 12th and 20th of May, and it will be thorough and consecutive. Now is the time to begin the summer campaign against ill-health, sickness, and premature death. The hot season is one in which we have to meet peculiar dangers to health, especially to young children. The work appeals to the common sense of every householder and to the strongest of instincts, that of preservation of life and family from sickness, infectious disease and the removal of common nuisances. The greatest good to the greatest number, in the matters of health, is the real motive, and should be clearly understood. It is not enough to secure the organization of your Local Board of Health. You must help in its work. Do not forget that it is largely dependent upon the people whom it serves for the necessary stimulus to its work. If the people are satisfied with a spasmodic effort in April and May, a little cleaning of streets, or removal of every public nuisance, and then have a dead calm, till a sudden shock calls for a sudden activity, the chances are that the Board of Health will not accomplish much. If on the contrary, the people watch whether the spring work includes out-houses, back-yards, slaughter-houses, pig-pens, etc.; whether infectious diseases are promptly dealt with; whether the Board is constantly watchful and active; whether its membership is such as to secure thorough and active co-operation and efficiency, the Board itself will feel the stimulus of the public eye and interest, and the work will be better and more sustained and continuous, just in proportion as its criticism and support are just, constant and faithful. This Board earnestly invokes the aid of educated public opinion as the strongest support of its work."

GEO. C. WELLNER, M. D., Health Officer.

JOHN H. LEWIS,

E. M. SCHMIDT,

Board of Health.

Wabasha, Minn., April 12, 1889.

### INFECTIOUS DISEASES OF MEN.

*Scarlatina.*—Teien Tp., Kittson Co.—December 27, K. Kjorsvik, member L. B. of H., telegraphed: "Case scarlatina, quarantined." January 2, A. Stenquist, T. C., reported: "December 25, A. Hanson, of this town, reported to C. B. S., that two of his children were sick, who immediately ordered Dr. Ross, of Drayton, to investigate. He (December 28) pronounced it scarlatina. On the same day a meeting of the L. B. of H. was held, and K. Kjorsvik, a member, was authorized to act for them. Family quarantined, and Dr. Ross employed as medical adviser. It was found that two families had been visiting this one, and that in one of these there was a case of the same disease—quarantined, December 31. Two first cases nearly recovered, but the last one is in a critical condition." March 16, T. C. reported: "All cases scarlatina recovered, and quarantine removed."

*Diphtheria.*—Marshall Co.—January 3, the Health Officer of Argyle reported cases of "putrid sore throat" in his village and vicinity, and asked for an investigation. Accordingly the Secretary requested Dr. Dampier, former Health Officer of Crookston, to visit and report. He did so, and found the disease to be diphtheria. As this disease was reported in Argyle (v.) and the townships of Alma and Middle River adjoining, the Secretary, March 15, under section 14, chapter 132, laws of 1883, ordered these three Boards to act together in the control of this outbreak, and asked them to meet in conference at the office of the Health Officer at Argyle. Among other replies to this request, the following was received from C. T. Ohmer, C. B. S. of Middle River

Tp., and illustrates the methods of our best township Boards. "Your instructions duly received and acted upon promptly. Met the Alma Board as suggested and arranged cordial and strict joint quarantine. One of our special officers disregarded his instructions, and visited an infected house with his wife, and laid out a dead child while there.

While sympathizing with his good will towards a friend, we promptly quarantined himself and wife for five days, and thoroughly disinfected them. Some objection was raised to this action, but we considered it our duty towards the public to include all exposed persons in order to make it practical quarantine. Believing we can control this disease, as the public realize this Board requires obedience to its orders or an arrest."

*Measles*.—Excelsior (V.) Hennepin Co.—The contagion in this outbreak was probably imported from Gibbon (v.) Sibley Co., by a man who was shaved there by a barber just convalescent from an attack of the disease. February 24, Dr. J. R. Walker, H. O., Excelsior, reported "case of measles in boarding house, shaved by barber at Gibbon just convalescent from measles. I think I can confine the outbreak." February 28, Secretary referred matter to Gibbon authorities who reported, March 1: "Saw barber just had measles, and he related he had shaved a man who had worked on depot building, but told him he had the disease. About twenty cases in village, and cases have been in house where this man boarded."

Several subsequent cases have occurred in Excelsior, traced to exposure to this man from Gibbon.

#### A MEMORANDUM,

BY THE SECRETARY.

On the duties of Local Boards of Health under the law for *the inspection, within twenty-four hours of their slaughter, of all cattle, sheep, and swine to be killed for human food.*

NOTE.—This paper is in answer to many requests for advice, from Health Officers, Local Boards of Health and others interested in the matter. The State Board is anxious to afford every assistance in its power to aid in the enforcement of the law. The Secretary is preparing, with the assistance of the ablest authorities on the subject in this country, a brief instruction as to best methods of detecting disease, infectious or other, in animals intended for human food, or any other condition affecting the healthfulness, or food value, of the flesh of such animals.

It is proper to add a reply to the question often asked, Was the Secretary of the State Board consulted in the preparation or modification of this law? He was shown the printed draft in the hands of the legal gentlemen who prepared it, and, as requested, suggested such changes as seemed to him necessary to make the law, what it proposed to be, an act for the protection of the public health. Not one of his suggestions was adopted, and the only change he was able to secure was, by the assistance of Senator Truax, the provision that animals found, by this inspection, affected with infectious disease, should be removed and destroyed.

*The sanitary intention of the law.*—To prevent the slaughter of cattle, sheep, and swine which are not "healthy and in suitable condition to be slaughtered for human food," by an inspection of the living animal, *within twenty-four hours of its slaughter*. The inspection is *not of the meat*, but of the animal, not more than twenty-four hours before it is killed.

*When must the inspection be made?*—"Within twenty-four hours before the slaughter of the animal."

*Where is the inspection to be made?* Not specified, and presumably therefore, where the applicant asks to have it made.



Local Boards of villages and cities would further a good purpose, if they could concentrate the butchers into one place for killing and preparing the meat, and thereby diminish the trouble and expense of the inspection. This they may do under chapter 222, laws of 1885.

*For whom is the inspection made?* "Persons applying for such inspection."

*Who makes the inspection?* A person or persons appointed by the Local Boards of Health, of cities, villages, boroughs, and townships.

*How is he elected?* By a majority vote of the Board, it is fair to assume, as no other method is specified in the law.

*What qualifications are requisite for an inspector?* The ability, in the judgment of the Board electing him, "to determine that any cattle, sheep, or swine, proposed to be killed for human food, are healthy and in suitable condition to be slaughtered for that purpose, by an examination of such cattle, sheep, or swine, within twenty-four hours of said slaughter."

*How many inspectors may be appointed by any Board?* "One or more," as in the judgment of the Board is necessary for the proper execution of the law.

*Term of service of inspectors?* "One year or till successors are appointed and qualified."

*Territory of inspectors?* "Coextensive with that of the Board appointing them."

*Must the inspector be a veterinary surgeon?* The law makes no such provision and so any one whom the Local Board of Health believes competent, and elects, may serve.

*Should the inspectors report regularly to the Local Board appointing them?* As agents of the Board for a special purpose, they should be required to file copies of certificates, and memoranda of all official acts, with the Board as it may specify in its instructions. In no other way can the Board be aware of the working of this department of its work for which it is as responsible as for any other performed by deputy.

*Form of certificate to be prescribed by Local Boards for the use of inspectors.* The law provides that each certificate, to be made in duplicate, "shall contain a statement to the effect, that the animal or animals, inspected, describing them as to kind and sex, were, at the date of such inspection, free from all indications of disease, apparently in good health, and in good condition, to be slaughtered for human food," beyond this the Board "shall regulate the form of certificate to be issued by such inspectors."

*How is the inspector to be paid?* By fees "to be paid by the persons applying for such inspection."

*Who determines the fee to be paid?* The Local Board of Health who, "shall regulate the fees, which shall be no greater than are actually necessary to defray the costs of the inspection provided in section three (3) of the law."

*Are any Local Boards of Health exempt from the appointment of inspectors, as provided in this act?* The law says, "it shall be the duty of the Local Boards of Health of the several cities, villages, boroughs and townships within this State." So none are exempt.

*Can any cattle, sheep, or swine, be slaughtered for human food in this State without this inspection?* No.

*Does the law apply to individuals wishing to slaughter their own animals for the use of themselves or their families?* It excepts no one.

*Has the State Board of Health any discretionary power in the matter?* No.

*Does the law effect previous legislation for the control of infectious diseases of animals or the sale of diseased meats?* No. There is no clause repealing previous legislation, nor do the provisions of the act conflict with previous laws.

*Who will supply blanks for certificates and forms for reports?* So soon as it is clear just what the form of the blank should be, and what ought to be the reports to be required by Local Boards, the State Board will supply the necessary blanks to all Boards who will adopt them.

Some other important questions have arisen, and been referred to the Attorney-General for his opinion, which will be published as soon as received.

#### DISEASES OF ANIMALS.

**B**ILL OF HEALTH FOR ANIMALS TO BE SHIPPED FROM MINNESOTA ELSEWHERE.—Applications have lately been made for these blanks by the C., M. and St. P. and M. & St. L. Ry. Co.'s for use at the Minnesota Transfer. They have also been furnished to several Health Officers, to whom applications for certificates have been made, and to cattle shippers. Some western States still require this certificate for cattle to be admitted without the usual quarantine on the borders. Blanks will be furnished from this office to those applying for them.

**I**NSPECTION OF CATTLE, SHEEP AND SWINE, WITHIN TWENTY-FOUR HOURS OF THEIR SLAUGHTER FOR HUMAN FOOD.—The new law, improperly called "*The meat inspection law*," has not been officially published, but the current copy in the newspapers is probably correct. The "Memorandum," published herewith, is in answer to the common requests of many Health Officers, and Boards of Health. All other information obtainable will be furnished promptly, either by correspondence or by circular letter

**J**UDGING BY OUR REPORTS, there is less glanders or other infectious diseases of animals in the State than heretofore, but this is the season when such diseases are very likely to occur. Notify the Secretary promptly if any do occur in your district, giving names, addresses and dates, and describing the symptoms as well as possible. Isolate all suspected animals till the facts are known. This can be done *on the farm of the owner* and usually, except for glanders or farcy, in a way to cause him the least trouble.



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, March 15, 1889.

Monthly Supplement to Report on Vital Statistics, }  
No. 7, January, 1889.

(NOTE.—In the following table of death causes.

**Puerperal Diseases** includes *Puerperal Fever*, and *puerperal septicæmia*.

**Diarrhœal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of all, over five years of age.

**Diarrhœal Diseases of Children** includes intestinal diseases, under 5 years, during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tubes Mesenterica Hydrocephalus*, and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we have been unable to classify. Not classified includes deaths from certain specified causes, not included in the report following.

*Deaths from all Causes*.—December, 1887, 1,182; December, 1888, 1,162; January, 1887, 747; January, 1889, 1,068.

See page 28 for comments concerning mortality from certain diseases.

MONTHLY STATEMENT OF BIRTHS—JANUARY, 1889.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO MARCH 15, 1889).

GRAND TOTAL, 1876.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
SEX.	Males .....	51.25	1976	1013	.....	.....
	Females.....	48.18	.....	.....	952	.....
	Unknown .....	.56	.....	.....	.....	11
COLOR.	White.....	99.85	1973	1010	952	11
	Colored.....	.15	3	3	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
CONDI- TION.	Legitimate.....	99.62	1969	1009	949	11
	Illegitimate.....	.38	7	4	3	.....
	Unknown .....	.....	.....	.....	.....	.....
NO. AT BIRTH.	Single .....	97.98	1986	993	992	11
	Twins .....	2.02	40	20	20	.....
	Triplets .....	.....	.....	.....	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY.	Both American.....	25.86	511	256	253	2
	Both Foreign.....	56.73	1121	576	538	7
	Am'n Father—Foreign Mother....	6.02	119	61	58	.....
	Foreign Father—Am'n Mother....	10.02	198	104	92	2
	Unknown .....	1.39	27	16	11	.....

## SUMMARY OF RETURNS OF DEATHS, FOR THAT MONTH, FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Month, 1068.																			Total of each Disease.
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Small Pox .....																				0
Measles .....	■																			22
Scarlatina.....	■																			25
Diphtheria.....	■																			75
Croup .....	■																			26
Whooping Cough..	■																			6
Typhoid Fever....	■																			32
Erysipelas.....	■																			13
Puerperal Fever...	■																			8
Diarrhoeal Disease	■																			2
Diarrhoeal Dis. of Children .....	■																			21
Insanity.....	■																			11
Convulsions.....	■																			38
Other Diseases of Nervous System.	■																			60
Cancer .....	■																			18
Phthisis .....	■																			91
Other Tubercular Diseases.....	■																			9
Diseases of Heart.	■																			44
Bronchitis.....	■																			37
Pneumonia and Pleurisy.....	■																			84
Diseases of Urin- ary Organs .....	■																			10
Still Birth.....	■																			61
Premature Birth..	■																			13
Old Age.....	■																			100
Violent Deaths....	■																			34
Not Classified....	■																			105
Ill-defined and Unknown .....	■																			123
Total Males.....																				
Total Females....																				
Grand Total .....																				

OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO MARCH 15TH, 1888).

Per cent. of deaths during the month.	SEX.		SOCIAL STATE.				AGE.												NATIVITY.				PARENT NATIVITY				Localities Invaded	Counties.									
	Males.	Females.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.	Other Minnesota.	Other U. S.	Foreign.			Unknown.	Both American.	Both Foreign.	American Father.	Foreign Mother.	Foreign Father.	American Mother.	Unknown.	
2.06	6	16	5	1	1	1	2	1	6	5	1	1	1	1	2	2	1	1	1	1	1	1	4	2	1	2	3	5	1	1	1	1	1	1	19	16	
2.34	13	12	12	12	1	1	2	1	2	3	3	4	4	3	1	1	1	1	1	1	1	1	8	4	2	2	5	10	4	8	2	2	2	2	18	15	
7.02	32	43	32	39	4	1	4	3	6	4	7	7	9	2	2	1	1	1	1	1	1	1	14	17	9	2	7	20	2	3	3	3	3	3	2	37	24
2.43	12	12	12	12	1	1	4	3	3	3	1	1	3	1	1	1	1	1	1	1	1	1	7	3	1	1	2	10	4	7	3	3	3	3	20	15	
5.6	1	5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	6	6		
3.60	18	14	16	2	2	2	11	2	1	1	1	2	2	2	9	2	2	1	1	1	1	1	5	2	3	11	1	1	9	1	1	2	3	20	19		
1.21	3	10	1	6	3	1	4	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	4	3	2	1	3	4	1	3	4	1	1	2	11	11	
7.5	8	8	8	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	5	1	5	2	2	2	7	7		
1.8	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	1	
1.96	14	14	14	14	1	1	11	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	1	2	1	5	5	2	3	1	2	2	2	1	1	1
1.03	9	7	4	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	4	5	2	2	2	2	2	2	7	6		
3.55	27	27	27	27	1	1	21	2	2	3	3	3	3	3	1	3	1	1	1	1	1	1	24	2	1	1	4	4	19	1	3	3	3	2	4	4	
5.61	31	29	22	7	1	2	11	2	2	3	1	1	1	2	3	1	3	2	2	3	3	1	9	8	2	11	7	7	20	2	2	2	2	2	23	19	
1.68	4	14	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	5	5	7	1	5	21	3	3	3	3	3	3	36	31	
8.52	38	53	17	14	2	5	1	1	1	1	1	1	1	1	13	5	5	5	5	5	5	2	1	3	3	8	23	1	8	5	25	2	2	8	5	10	
8.4	7	2	7	7	1	1	2	1	1	1	1	1	1	1	10	14	7	10	5	5	5	1	1	3	5	13	30	2	2	39	2	2	2	8	52	43	
4.12	28	16	11	11	2	4	3	1	1	1	1	2	1	2	2	3	6	3	6	6	6	1	6	2	1	19	5	19	3	11	1	1	1	4	2	27	
3.46	14	23	13	1	1	1	11	2	1	1	1	1	1	1	1	1	1	1	1	1	1	8	2	3	1	1	3	10	1	1	1	1	1	1	2	14	12
7.86	43	41	28	9	1	5	10	4	1	2	1	4	2	4	3	4	1	4	3	3	5	1	15	8	6	14	9	27	1	2	2	2	2	2	4	4	57
9.8	6	4	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	4	4	4	4	4	4	8	8	
5.71	40	21	40	21	1	1	40	21	1	1	1	1	1	1	1	1	1	1	1	1	1	38	2	1	1	2	13	20	1	2	2	2	2	2	4	4	
1.21	5	8	5	5	1	1	5	8	1	1	1	1	1	1	1	1	1	1	1	1	1	20	1	1	2	7	9	1	1	1	1	1	1	3	23	20	
9.36	55	45	1	29	19	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	7	1	1	1	2	2	1	1	1	1	1	1	1	4	4
3.18	26	6	14	3	2	9	1	1	1	1	1	2	3	3	11	3	4	1	1	1	1	1	2	3	1	1	2	3	20	2	2	2	2	6	1	21	
9.83	54	51	34	16	4	10	7	2	1	1	2	3	3	3	3	3	2	8	8	8	8	1	15	11	11	17	22	20	25	1	5	3	3	9	87		
1.51	68	55	56	27	3	6	47	3	2	3	1	1	1	1	1	1	1	1	1	1	1	35	17	4	10	2	9	46	3	2	8	2	2	2	8	53	
558	378	113	30	37	184	32	10	23	13	30	18	22	45	27	27	33	31	37	23	8	211	76	84	179	8	109	336	12	26	75	75	75	75	75	75	75	
510	303	130	45	32	142	37	14	16	10	23	14	26	51	37	24	30	27	19	6	174	84	101	144	7	99	299	10	32	70	70	70	70	70	70	70	70	
558	510	682	243	75	69	326	69	24	39	23	58	27	48	69	64	51	63	58	64	41	14	885	90	185	323	15	208	635	22	58	145	145	145	145	145	145	145

## MINNESOTA.

DISEASE, DISTRIBUTION AND MORTALITY IN JANUARY, 1889, WITH  
RETURNS OF OTHER MONTHS FOR COMPARISON.

	Jan. 1887.	1888.		Jan. 1889.
		Jan.	Dec.	
Measles.....	4	3	17	22
Scarlatina.....	17	11	15	25
Croup.....	18	14	31	26
Diphtheria.....	59	94	84	75
Typhoid Fever.....	37	42	51	32
Diarrhœal Diseases of Children.....	3	11	19	21
Phthisis.....	56	83	92	91
Bronchitis.....	37	39	48	37
Pneumonia.....	56	80	89	84

*Measles*—Jan. 1888, 3 cases, 3 localities, 3 counties; Dec. 1888, 17 cases, 14 localities, 13 counties; Jan. 1889, 22 cases, 19 localities, 16 counties. A continued increase in distribution and mortality.

*Scarlatina*—Jan, 1888, 11 cases, 7 localities, 7 counties; Dec. 1888, 15 cases, 10 localities, 9 counties; Jan. 1889, 25 cases, 18 localities, 15 counties. A marked increase in prevalence and mortality.

*Croup*—A decreased mortality from previous months.

*Diphtheria*—Jan. 1888, 94 cases, 57 localities, 36 counties; Dec. 1888, 84 cases, 43 localities, 29 counties: Jan. 1889, 75 cases, 37 localities, 24 counties. A decrease in mortality from both January and December, 1888.

*Typhoid fever*—Jan: 1888, 42 cases, 26 localities, 21 counties; Dec. 1888, 51 cases, 27 localities, 22 counties; Jan. 1889, 32 cases, 20 localities, 19 counties. A marked decrease from previous months.

*Bronchitis*—A decrease from Dec. 1888 and nearly the same as Jan, 1888.

*Pneumonia*—A slight decrease from previous month, but a slight increase over same month in 1888.

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

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VOL. V. NOS. 2, 3.

APRIL and MAY, 1889.

WHOLE NO. 51

**D**ISTRIBUTION AND MORTALITY OF SPECIFIED DISEASES IN MINNESOTA,  
FOR THE MONTH OF APRIL, 1889, AS REPORTED UP TO MAY 20TH.—  
(Population estimated, 1889, cities over 2,000 inhabitants, 530,000, towns and villages, 1,047,860.)

Total number deaths, 832; males, 448; females, 384. 47 per cent. occurred in cities having a population of more than 2,000, 442 in townships and villages. under 1 year of age, 26 per cent; from 1 to 5 years, 14 per cent; 5 to 15 years, 10.9; 15 to 30 years, 14 per cent; 30 to 50 years, 12 per cent; 50 to 70 years, 12 per cent; over 70 years, 10 per cent. Of 218 deaths under one year, 57 per cent were in cities; from 1 to 5 years 36 per cent were in cities.

*Measles*.—10 cases, 4 males and 6 females, 9 localities, 9 counties,—none of these in cities. A decided reduction from preceding month (32). 2 under 1 year of age, 7 between 1 and 5 years.

*Scarlatina*.—32 cases, 18 males, 14 females, 27 localities, 11 counties, 34 in 4 cities. An increase over preceding month. Ages, under 5 years, 40 per cent.

*Diphtheria*.—69 deaths, 30 males, 39 females, in 28 localities, 14 counties; 52 per cent in 6 cities. A slight increase over preceding month. Ages, 40 per cent under 5 years, 26 per cent between 5 and 15 years, 7.2 per cent between 15 and 20 years.

*Croup*.—19 deaths, 9 males, 10 females, in fourteen localities, nine counties, 26 per cent in two cities. Stationary as compared with last month. 84 per cent were under 5 years of age, 15 per cent between 5 and 10 years.

*Typhoid fever*.—20 deaths, 13 males and 7 females, in 13 localities, 6 counties; 65 per cent occurred in 6 cities. A decrease compared with last month. Ages, 1 between 5 and 10 years, 70 per cent between 15 and 30 years, 20 per cent between 30 and 50 years.

*Diarrhoeal diseases of children*.—10 deaths, 6 males and 4 females; in 5 localities, 4 counties. About stationary. 70 per cent in 2 cities.

*Bronchitis*.—21 deaths; 14 males, 7 females; in 11 localities, 8 counties, 57 per cent in 2 cities. Ages, 66 per cent under 1 year, 9 per cent between 1 and 2 years. A decided decrease from previous month.

*Pneumonia*.—68 deaths, 45 males, 23 females; in 41 localities, 28 counties, 41 per cent in cities. Ages, 25 per cent under 1 year, 22 per cent between 1 and 5 years, 7 per cent between 5 and 15 years, 19 per cent between 15 and 30 years, 9 per cent between 30 and 50 years, 18 per cent over 50 years. A great reduction from previous months.



## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF APRIL, 1889.

## DISEASES OF MEN.

Diphtheria.....	}	cases, 85
		deaths, 26
Scarlatina.....	}	cases, 138
		deaths, 14

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	12
Reported during the month.....	9
Killed.....	2
Released.....	1
Isolated.....	6

Remaining May 1st, 1889, isolated or not accounted for..... 18

NOTE.—Most of these are cases exposed, and isolated for further observation.

**M**ORTALITY FOR FEBRUARY AND MARCH.—We publish the returns for both months to-day, and hereafter shall publish this report, if possible, near the 15th of the month; that is, within fifteen days of the end of the month to which it relates. We may not be able to give all the data as at present, but all that are essential for sanitary purposes.

**T**HE MAY INSPECTION will have been completed in many towns, villages and cities before this note is read. The circular on "Earth Closets," a revised edition, was sent out last month. Now we again issue the "May Inspection" circular. Nothing new has arisen since the edition of last year, but common experience is coming to the support of the truths therein stated, and some of our best Local Boards of Health, and Health Officers are doing better work this year, than ever before, having learned its value by experience.

### ORGANIZATION OF VILLAGE AND CITY BOARDS OF HEALTH.—

A voluminous correspondence has been necessary to get these organizations into legal shape, but the matter is improving rapidly, and the records will be complete very soon.

**I**S MEMBRANEOUS CROUP DIPHTHERIA? seems a new question with some of the Eastern Sanitary Authorities. It is as old as our legislation for Infectious Disease notification (1883) in Minnesota, and our rule has been to look upon it as Diphtheria when the latter disease is prevailing, and always to be suspected. It does not follow that we believe the disease to be the same, but that it is so difficult to make a differential diagnosis that for safety, the sanitary management is the same.

We have abundant evidence of the necessity for this precaution in the efforts now making all over the State to still further restrict the distribution and mortality of Diphtheria. There is hardly a Health Officer whose experience does not justify this, and it is the rule with us.

HOW ARE THE EXPENSES OF TOWNSHIP AND VILLAGE BOARDS OF HEALTH FOR INFECTIOUS DISEASE CARE, TO BE PROVIDED FOR?—We succeeded by the assistance of the Attorney General and members of the Legislature, in securing the passage of the following law. Why Minneapolis and St. Paul were excepted, we cannot tell, but the original bill passed the Senate and was detained in the House till that change was made.

The law as relates to Townships and villages is the best of a variety of suggestions which were made to meet the acknowledged failure of the old law. Township and Village Boards hereafter arranging as to expenses to be incurred in dealing with infectious diseases will take the advice and secure the approval of the representative of their District in the County Board. The law is Chapter 196, Laws of 1889.

*AN ACT TO AMEND CHAPTER ONE HUNDRED AND THIRTY-TWO [132] OF THE GENERAL LAWS OF EIGHTEEN HUNDRED AND EIGHTY-THREE [1883], AS AMENDED BY CHAPTER FOUR [4], OF THE GENERAL LAWS OF EIGHTEEN HUNDRED AND EIGHTY-FIVE [1885], RELATING TO BOARDS OF HEALTH.—CHAPTER 196, LAWS OF 1889.*

*Be it enacted by the Legislature of the State of Minnesota.*

SECTION 1. Section twenty-nine (29) of Chapter one hundred and thirty-two (132) of the General Laws of eighteen hundred and eighty-three (1883), as amended by Section two (2) of Chapter four (4) of the General Laws of eighteen hundred and eighty-five (1885), is hereby amended so as to read as follows:

SEC. 29. All expenses so incurred for the control of infectious diseases, etc., by any Town, or Village Board of Health, shall hereafter be authorized by the County Commissioner of the District wherein such town or village is situated, and when so authorized shall be audited by the County Commissioners, and when so audited, paid out of the County treasury by orders on the Treasurer, drawn by the County Auditor, and paid out of the general revenue fund of the County, as other claims against the County are paid. All expenses incurred by any City Board of Health, shall, in the first instance, be borne by and paid out of the city treasury. The proper authorities of said city shall certify the amount required to reimburse said city to the County Auditor at the time of certifying other taxes, and such Auditor shall extend on the tax list of the County a tax sufficient to pay the amount so certified, which tax shall be collected as other taxes and passed over to the Treasurer of such city.

SEC. 2. This act shall take effect and be in force from and after the date of its passage; provided that that the provisions of this act shall not apply to the cities of Minneapolis and St. Paul.

Approved March 4, 1885.

THAT BARBER WITH THE MEASLES, to whom we referred last month, sent the disease also to Birch Cooley, Renville County. It will be interesting to foot up his account, not for shaving and hair cutting, but for measles, when the last report comes in. Ser-

iously though, his success is strong evidence—"that a little measles goes a great way," to change an old proverb.

MEASLES is still a very noticeable cause of mortality with children and the variable weather of the last six weeks will have left its mark in secondary affections very likely to be, in some, lifelong injury. Repeat the warning of last month. *Carefully protect children getting up after measles, from exposure, until entirely well;* i. e., until all signs of cough and disease of the nose, throat and lungs, have disappeared and the weather is such that outdoor life will be a help, rather than a danger.

THE MONTHLY COLLECTION AND RETURN OF VITAL STATISTICS is still the duty of Health Officers, except in the cities of St. Paul and Minneapolis, where the city clerks are, by special exception, assigned to the duty. Township Clerks report for the Township, *but not for* organized villages in the Township as so many of the new Clerks have supposed. In small villages, the Health Officer may assign the duty to the Township Clerk, though he cannot assign the responsibility, for the work of his deputy.

THE PUBLIC SCHOOLS AND INFECTIOUS DISEASES.—What are their relations? Who is responsible? Section 26, Chapter 2, Laws of 1883, reads as follows:

"SEC. 26. That no principal, superintendent or teacher of any school, and no parent, master or guardian of any child or minor, having the power and authority to prevent, shall permit any child or minor having scarlet fever, diphtheria, small pox or any dangerous, infectious or contagious disease, or any child residing in any house in which any such disease exists, or has recently existed, to attend any public or private school until the Board of Health of the town, village, borough or city shall have given its permission therefore, nor in any manner to be necessarily exposed, or to needlessly expose any other person to the taking or to the infection of any contagious disease."

It establishes the relation between the School Board and the Board of Health quite clearly, and if thoroughly understood, will secure, or enable the Board of Health to secure, efficient co-operation. Let the Health Officer notify the superintendent of schools of the families invaded by infectious disease immediately, and all who are known or reasonably suspected of having been exposed to them. Ask the superintendent, in turn, to look out for sick chil-

dren when any infection is impending and to notify the Health Officer immediately. Thorough co-operation between these officials very often does away with the necessity for closing the schools.

It is a matter of *mutual* concern and responsibility, but the greatest responsibility is upon the Board of Health and its Health Officer.

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THE REGULATION OF OFFENSIVE TRADES AND EMPLOYMENTS, (Chapter 222, Laws of 1885,) is a duty and just now, a very important one, of all Boards of Health. Some of the country Boards seem under the impression that they have no control in the matter, and are therefore at the mercy of any one inclined to impose on them. This is especially true of Townships on the border of our larger cities to which offensive trades and employments are often driven by the stringent regulations of the cities or are drawn by cheaper land and the hope of less oversight. See the correspondence with the Chairman of Fridley Township, under "Sanitary Questions and Answers."

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WOMEN'S CLUBS.—I was able, on the 23rd of April, to accept a long-standing invitation to address the Women's Club of Wisconsin, at Milwaukee. It is really a Women's Club for the speaker for the occasion, was the only man admitted. He was permitted to invite a guest, but it must be a woman. The ordeal was not as severe as feared; he found himself the guest of a hundred refined and courteous women, who listened to his appeal for a committee to investigate the need of woman's work in Milwaukee, in matters of Public Health, particularly in the study and reduction of infant mortality. He was compelled to be a little statistical, somewhat dogmatic, and, at times, a little pathetic, but for an hour had the undivided attention of his audience and might have spoken longer without protest.

It is a custom, I found out to my cost, for the Club to criticise the papers, and cross-examine the speaker. The questions asked me went to the root of the matter, many being put by mothers who spoke to the point, and demanded facts not theories. It was very well that I had provided myself with an abundance, to illustrate and enforce my statements.

Very cordial resolutions were adopted by the Club after a half hours cross-questioning, and what pleased most of all, a committee has been appointed to investigate the subject. Dr. Reeve, the Sec-



retary of the Wisconsin Board, is to be congratulated on having so powerful a helper in sanitary work as this club will prove to be.

I would give a good deal to have a similiary disposed body of women in Minnesota, and was told in Milwaukee, that before long we should have. This assurance came in a very pleasant way from the honored guest of the Club and an interested listener, *Julia Ward Howe*, who addressed the ladies in a very cheerful and charming way. She recited, at their earnest request, her famous "Battle Hymn of the Republic," fixing more thoroughly than ever that grand anthem in the memories and hearts of all of us who were so favored as to hear her. She was thoroughly alive to the duties of mothers, the "Health Officers of Home" as I had called them, and she cheered us by her assurance that the women of the country will soon be heard from, as had these of Wisconsin.

The Athanaeum, the building in which the Club meets and dispenses a gentle hospitality, is owned, furnished and sustained by women. The investment is over \$30,000, is was stated, and the net income last year was five per cent. Each organization is a grand success and demonstrates some facts which I hope to discuss in another number.

C. N. H.

#### SANITARY QUESTIONS AND ANSWERS.

[T. C., abbreviation for Town Clerk; C. B. H., for Chairman Board of Health; H. O., for Health Officer; L. B. of H., for Local Board of Health.]

*Suspected rabies in dogs—Proper action for a Local Board of Health.*—March 28, C. B. H., Bethel Tp., Anoka Co., reported: "There was a dog in the southeast part of our town that was supposed to be *mad*, and he ran over quite a piece of country before he was killed. He bit a number of animals, so I was told, and the Board of Supervisors ordered them confined. This morning I was told that one of the hogs that was supposed to have been bitten showed symptoms of being crazy. I went down to S's and A's this morning and found one of those hogs had died and it had turned a dark purple all over. A had one killed; he has two dogs that have been exposed, but not certain whether bitten, which I ordered tied up until further orders. Would like some advice in the matter, and to know what my duty is in this case." April 1st the Secretary replied, "Isolate all infected or suspected animals in the case, and at the expense of the owners. Keep the dogs in question tied up, until it is known whether they have the disease. In case they show signs of it, *do not kill them until the positive nature of the malady can be ascertained*. Please keep me informed, watch the swine or other stock suspected and call a competent V. S., as required by law, if, in your judgement necessary. Am sorry the first dog was killed. Had he been shut or tied up, it would have been easier to decide. I doubt Rabies very much. This is not the season nor do you give the history of the disease."

*Scarlatina. Pr per action in case of doubt.*—April 1st. C. B. H., Hamden Tp., Becker Co. reported "There have been two cases of Scarlatina in house of J. E. N., this town, both proving fatal, before reported to us. House quarantined. One child now sick, but do not know whether it has Scarlatina or not. How shall we proceed?" Apr. 6th Secretary wrote, "I think it safe to assume that the child in question has the same disease (Scarlatina) as those that died,



at least until it is proven to the contrary. Is there no attending physician? See that disinfection of premises, persons *and especially clothing* is thorough after the disease disappears. Dont let them lack for attention."

*Diphtheria. Length of quarantine, and has physician right to enforce it.* Apr. 6. Dr. S., Terrace, Minn., asked, "Has a physician a right to quarantine four persons in one room, one only infected? How many days quarantine after the patches disappear from the throat in case of diphtheria?" Apr. 9, Secretary replied, "A physician has no right to quarantine, except as a Health Officer, acting for a Local Board of Health, but may advise isolation and must report *immediately*, if possible, by one of family as messenger directly to the Local Board, who are responsible for isolation. Never confine well persons with sick of any infectious disease, if it can be avoided. I must have full details before advising in any given case. Isolate, as a rule, convalescents from diphtheria for at least three weeks after the patches have disappeared; the greatest danger then is from infected *clothing* and things. It is very difficult to remove the infection from inhabited rooms, and rarely safe to let children sleep in such rooms, till a long time, after even with the most thorough, disinfection."

*The first duties of a newly elected Board of Health.*—Apr. 8, the Health Officer of Little Falls wrote, "I have been elected Health Officer; J. Taylor and M. Lafond for two years, H. B. Tuttle and N. Dumont for three years. Now, as we are determined to have everything pertaining to the health of the city attended to to the best of our ability, we count on your advice when you should think it necessary to be given. I wish you would send me the program of the duties of Health Officer, if any are printed." Apr. 10, Secretary replied, "The first duty of your Board is to be thoroughly familiar with the sanitary condition of your city. To do this satisfactorily, I advise that you make immediately a careful sanitary inspection as suggested in our circular on the subject, a copy of which I enclose. The paper explains itself, and if you will make a record as there suggested, you will be better prepared than in any other way for intelligent action, because it will reveal your sanitary needs as no other method can. The copies of "Public Health in Minnesota," sent to your predecessor, are the property of the Local Board of Health and with all blanks and other papers relating to its work are to be transferred to you. Please obtain them. "Public Health" cannot be duplicated, and should be preserved with care. All infectious disease of men or domestic animals must be looked after and cared for."

*The Health Officer may investigate suspected infectious diseases.*—The question as to the duties of a Health Officer when infectious disease is suspected to exist, but has not been reported to him, having arisen, the Secretary made the following reply April 12th: "under Sec. 18, Chap. 132, Laws of 1883, your board have power to investigate all cases of suspected infectious disease. When there is an attending physician, inquiry should be made at once to ascertain the true character of the disease and action taken accordingly. You are to protect the public health under the law and with strict regard to the rights of the people as of physicians and parents."

*Measles—Should they be isolated?*—The Town Clerk of Independence Tp., Hennepin Co., reported measles in his town, and that no action had been taken by the Board. Do you think it necessary to do anything in case of measles? April 24, Secretary replied: "Measles should be isolated as far as practicable. At any rate children from infected families should not be allowed to attend school. This disease, and its complications, caused more deaths in 1888, than did scarlatina, so you are justified in a thorough isolation and always to the extent of keeping children of infected families from school till entirely recovered and properly disinfected."

*Disposal of garbage, slops, etc.—Location of dumping grounds.*—April 20, Health Officer of Marshall, Minn. wrote, "Our village council has passed an ordinance designating the places on which ashes, manure and other garbage shall be deposited. First a slough about a quarter of a mile from residences on the outskirts of the town. The other place in a gravel pit about the same distance from town. What shall I do about it, go according to the ordinance? There

are tenants in town who live up stairs and throw their kitchen slops from the up-stairs windows. What is the best way of disposing of slops? Many people put manure around their trees and spread it on their lots—should this be allowed? Are we to allow several feet of manure covered with some earth, for grading up lots? How often ought manure around barns to be removed?" April 26, Secretary replied, "A slough near a center of population should never be used, as a dumping ground. It cannot but affect injuriously the water supply, which is very likely closely related to it. A gravel pit is safer, but neither ought to be used. Manure and refuse ought to be buried not over two feet deep on farming land, where it can by natural process decay and feed a crop. Slops are best disposed of on gardens, when practicable, through shallow drains or surface drains *well cared for*, will serve. Up-stairs tenants have no business throwing slops as described. If no sewer is provided, should be taken under grass plats, gardens or other cultivated land. Cess pools are as wrong as hole in the ground privies; if none of the methods proposed above are available, then the slops and garbage should be stored in (say) kerosene barrels till drawn away."

*How an offensive trade or employment can be dealt with.*—April 26, C. B. S., Fridley Tp., Anoka Co., wrote, "I write you for information in regard to removing a rendering and fertilizing factory, which is located in our town limits. Our citizens are complaining and claim that it is injurious to the general health of the town; the stench which comes from the works is almost unbearable. The Board of Health, composed of the Supervisors, have served a notice to quit inside of twenty-four hours. This was done April 16, and he is still running. As we will have to go to court, what would you advise us to do to stop it immediately. It should not be permitted and thereby destroy the comfort and health of a community in order that one man may enrich himself at the expense and health of others." April 27, Secretary replied, "Your letter is of such importance, that I reply immediately. As to the rendering establishment, it is under your control in one of three ways:—1st. As an *offensive trade*. Chapter 222, Laws of 1885, (enclosed) and any lawyer will direct you under it. The establishment has no business there without your permission *before hand* (Sec 2).—2nd, "As a *nuisance, source of filth or cause of sickness*." Sec. 6, Chap. 132, Laws of 1883.—3rd. You will notice that Chapter 222, Laws of 1885 (Section 5) enables any aggrieved person to take measures to abate, and, under the Penal Code, it can be dealt with (Sec. 348, Penal Code). In fact, there is no difficulty in finding law to prevent or control such establishments. 'Be sure you are right and then go straight ahead' to protect the health of your community. If your notice was in writing and duly served as you serve all other orders of the Township Board, you *began* right. Keep me informed and any assistance this Board can give to protect your rights, we stand ready to supply."

*Suspected Trichinæ.*—May 1, Dr. Reninger, Marshall, reported, "I mail you to-day, a specimen ham, which please examine for *Trichinæ spiralis*. I have two cases of suspected *Trichinosis*, from eating raw ham, from which the specimen was taken." May 3d, Secretary replied, "I have carefully examined pieces of ham, which you sent me suspected to contain *Trichinæ*. The samples which I took from all parts of the pieces sent, *contain no Trichinæ*, nor can I find any evidence that the meat is other than healthy. If you still have reason to suspect, send sections from near the bones and blood vessels in the muscles.

## A DULTERATIONS OF FOOD.—WHAT ARE THEY? HOW TO DETECT THEM? (Continued from February number.)

*Vinegar*—continued—Iron is never dangerous, and rarely present in noticeable amount. It can be detected with sufficient accuracy by adding a little of a fresh solution of tannin, to a small quantity of the suspected vinegar. The test is, in vinegars not too dark, quite delicate, and the intensity of the black, inky discoloration is proportioned to the amount of iron. If very marked, bet-

ter reject the sample, as it proves careless manufacture and suggests other impurities.

*Lead*—The laboratory tests, based on reaction with sulphuretted hydrogen, are not adapted to common use, but there are several colorimetric tests which are easy and reliable. One of them suggested long ago, and which we have recently tried on standard lead solutions in the laboratory, is that with bi-chromate of potash. Beside a solution of the salt, cheap and obtainable, in any drug store, you need a few slender bottles of clear glass. I used two-dram vials to-day, easily. They are big enough for any of the tests proposed in this paper. Use two vials for each test, one of the vinegar alone and one for each test. For example, if a cider vinegar is on trial. If it is not bright and clear, filter it through white blotting paper, before taking the samples. If bright, there may be considerable color, and not interfere with the test.

Fill two vials with the sample, and into one of them pour a few drops of the bi-chromate solution. If lead is present, a white cloudiness will soon appear proportioned to the amount. A well marked cloudiness will condemn for domestic use. As legal evidence, a quantitative analysis, only practicable in a laboratory, will be required.

*Acetic Acid*—This is the prime essential in vinegar, and should be at least four per cent. The best method, and the handiest one, is that proposed by Dr. Davenport, of Boston, but there are rough and ready ways worth trial and reliable enough for common use by Health Officer or pharmacist which I will give in next paper.

*"Apple-cider Vinegar"*—The variety preferred by the majority of house-keepers. It always contains two per cent of solids"—Davenport; so that here is an easy test. Take a known quantity, say an ounce, and evaporate in a weighted porcelain (saucer) dish, over a water-bath (tea-kettle). "The residue will be soft, viscid, of apple flavor, somewhat acid and astringent to the taste." If any commercial acetic acid has been added to "tone up" the strength of the vinegar the residue will have a smoky, pyroligneous taste, or odor. If it contains corn glucose, the residue, when burned, will emit the characteristic odor of burned corn. "In a pure cider-vinegar the tests, above named, will cause very slight, perceptible, turbidity, but the addition of a solution of acetate (sugar) of lead, will cause a voluminous and flocculent precipitate which will settle out in ten minutes, leaving a clear solution. Cider from re-pressed and fermenting apple pumace will not give this precipitate." Nor do the commercial, so called, wine, but really alcohol vinegars. These last can often be detected by specific gravity alone, and run as low as 1002°.

H.

(TO BE CONTINUED.)

**D**ISINFECTION OF PERSONS, CLOTHING, and ROOMS, AFTER INFECTIOUS DISEASES, is a constant subject of inquiry in our correspondence, and it is worth while to keep before our readers the essential facts, upon which advice is based, and the common sense of the methods advised.

The special poison of all infectious disease, is a living thing, peculiar to each disease, but all alike killed by certain agents which we use for that purpose. And this killing of the specific poison is *disinfection*. This is the strictly scientific use of the word but, in practice, we include under this process every



measure which diminishes, or removes, the infection from the room, or house. Different diseases can be most successfully attacked in various ways, but there are certain rules which apply to all. These poisons agree in growing most luxuriantly in foul air, and in damp, uncleanly, ill-lighted places. *Overcrowding* helps them, not only in this way, but, by aiding their direct transmission from person to person.

The first essential, then, in dealing with infectious diseases is to *forefend* them, by *cleanliness of persons' clothing, and everything in the house*. The only way to use this method is to make it a *rule of life always, before, during, after sickness*. When such diseases come and find this precaution not taken, it should not be neglected another hour, but all possible done immediately, to make up for lost time. Among the means to this end, *free ventilation* is the most important. I mean "through and through" ventilation, through windows and doors. This is possible in all rooms (*including cellar*), not occupied by the patient, and should be repeated often enough to destroy the stuffy and mouldy odor peculiar to crowding. The "dusting of rooms" should be done at this time, so that the dust, the source and carrier of much foulness in air of the house, may be taken away by the wind and oxydized and destroyed in the air of the open.

Another general fact, applicable to all eruptive diseases, (e. g. scarlet fever, measles, small pox), is that "a good greasing" all over with simple ointment (one part mutton tallow to two parts lard), is always in order, almost always a benefit as a remedy, and always does more than any other measure, to keep the poison, ripening in the skin, in the body clothing. The housewifely objection that it soils the clothes is true, but an advantage, as it compels more frequent change, not only of night-dress but of sheets and pillow cases. *But what shall be done with them?* Put them immediately into *boiling water*. You may use a little soap if you will, but need not put in any chemical. It is the *water, hot to boiling*, which kills. Boil for ten minutes, and then treat the clothes as if they had never been infected—they are perfectly safe.

Blankets, pillow, and bed ticks, may be treated in the same way, and the clothing of the nurse. *After recovery*, the warm bath, with plenty of soap repeated as need be till the last evidence of disease has disappeared. *After death*, the body should be wrapped in a sheet saturated with a strong solution of chloride of lime and then put into a tight casket for prompt and private burial.

What's to be done with the room that was occupied by one suffering from infectious disease? Everything which can be cooked with *boiling water* is therefore safe. All else must be fumigated with *moist sulphurous acid gas*.

Full directions are given in the circulars of this Board for this process, but we may be permitted to repeat that the room should be well steamed at the same time. This is easily done by the boiling water put in the tub, as directed, and may be helped by sprinkling the floor and walls with hot water before lighting the sulphur. After the fumigation, *thorough* "through and through" ventilation; and then hot soap-suds to the floor and to the walls if wood or painted. If papered, the paper will have suffered by the moist acid, so that it will come off all the more easily. (When it is one thoroughly off, never put on any more, but paint the walls. (The ceilings should not be painted, but always white-washed with *hot and fresh lime-wash*.)

Mind one important point, especially as respects diphtheria. After disinfecting a room, or house, see that no *moist*, damp, places remain. Have *floor, walls, closets*, every bit of wood work, *thoroughly dry*, before occupation of the room again, and put off such occupation by children as long as possible.

This recast of methods of disinfection, is the answer to various correspondents. H.

**THE TOXICITY OF EXPIRED AIR.**—M. M. Brown-Sequard and d'Arsonval, in confirmation of their experiments which occasioned so much controversy, last year, have just reported to the French Academy of Sciences a very interesting paper on the relations which exist between pulmonary consumption and expired air, in men and domestic animals, and also upon the poisonous character of substances coming from the lungs. We translate from the *Journal D'Hygiene*, March 14, 1888:

"These new investigations show that this peculiar poison, one or many, which escapes from the lungs with expired air, can kill, in small doses, in other ways than by direct injection into the veins or arteries, as under the skin or into the bowels. Its poisonous character is not due to the microbes it may contain, for after heating in a closed flask to 100° C. (212° F.) it is as fatal as before.

They are thoroughly satisfied that carbonic acid has nothing to do with the poisonous effects, for they breathed an air containing 20 per cent of that gas (the air of the open contains only 0.4 per cent) for an hour or two without marked discomfort, or any permanent effects. Their experiments were with rabbits, and they state, that there are, in confined air, other causes capable of affecting health, than the poison coming from the lungs, we do not wish to deny; but it seems to us, for the reasons given, (in our report,) that it is chiefly, if not exclusively, to this poison that death is due in our experience, after breathing air confined for a few days."

#### DISEASES OF DOMESTIC ANIMALS.

**INSPECTION OF CATTLE, SHEEP AND HOGS WITHIN TWENTY-FOUR HOURS OF SLAUGHTER.**—Our correspondence on this subject is increasing because the Local Boards have begun to discover that there is a lack of system entirely different from the other sanitary work demanded of them, and many serious defects in the law and the method of its operation. The State Board of Health will do its utmost to help the Local Boards, and endeavor to get all the *sanitary* advantages out of the law it is able to afford.

It is a notable fact that the Inspectors appointed for the great slaughtering centres, are not Veterinary Surgeons or specially trained for the work. It is true that the law *specifies* no qualifications, but it certainly assumes sufficient to enable the Inspector to give a reasonably accurate judgement, so far as this mode of inspection can enable one to do so, as to the healthfulness of the animals.

There is another reason why Local Boards should use care in selecting Inspectors, as stated by the Attorney General. The question was, "Can Local Boards of Health require from their Inspectors, copies of their certificates, and a report of their acts?" to which the reply is "The law requires the certificate to be made in duplicate, and one to be given the party applying for inspection, the other to be filed in the office of the Inspector, and further than this, the law makes no provision whatever for furnishing the Local Board of Health a record or report." So that the inference



drawn in the "memorandum," of last month, is wrong. The Local Boards have no authority, and can demand no reports from Inspectors appointed by them, but they "shall regulate the form of certificate to be issued by such Inspector and the fees to be paid him, etc., (Chapt. 238, Laws 1889, Sec. 2.)

Attention is called to the letter of the Attorney General in the present number. Many will be glad to learn that "the law contains no provision against slaughtering of animals without inspection where they are slaughtered for consumption by the party slaughtering the same, and are not exposed for sale." The vexed question of the value of an Inspector's certificate outside his district is answered "that if the animal is slaughtered within the time required, the vender is protected by the certificate, whether the meat be sold at the place of inspection or at any other place."

One consequence of this fact will be, has already been, the establishment of slaughter-houses in townships, who are supposed to be less strict in their requirements. These are so far small, and some slaughtering outside the small towns must be done in barnyards or retired places where the offal is not likely taken care of. Township and other Boards will look out for this "new dodge," it is both a nuisance and a danger.

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*THE ATTORNEY GENERAL ON THE NEW LAW FOR INSPECTING CATTLE, SHEEP AND HOGS 24 HOURS BEFORE SLAUGHTER FOR FOOD.*

STATE OF MINNESOTA,  
ATTORNEY GENERAL'S OFFICE. }  
ST. PAUL, May 8, 1889.

*Dr. Chas. N. Hewitt, Red Wing, Minn.*

DEAR SIR:—Your favor of the 23d ult. is at hand. You make the following inquiries concerning the law commonly known as the Meat Inspection law:

*First.* The law specifically states that the examination must be made within twenty-four hours before the slaughtering of the same; how is an Inspector to know this hour before hand? The conditions of his certificate are out of his knowledge unless he includes the date of slaughter in the certificate after the event.

*Second.* If the slaughter takes place more than twenty-four hours after the date of inspection, does it invalidate the certificate? If it does, is not the date of the slaughter essential to the certificate?

*Third.* How is the Legal Board of Health, its Inspector, the retail seller of meat, (not the butcher) or the purchaser, to know that the meat offered for sale comes from an animal inspected within twenty-four hours of its death, or that it was inspected at all?

*Fourth.* Should not, therefore, the form of the certificate to be prescribed by the Local Boards of Health, contain the statement that the animal to which it relates was slaughtered within twenty-four hours of inspection?

*Fifth.* Ought the description of animals in the certificate, to be sufficient

for individual identification, and should such records be verified before slaughter by the Inspector to prevent substitution?

*Sixth.* Can Local Boards of Health require from their Inspectors, copies of their certificates, and report of their acts?

*Seventh.* Would the certificate of an Inspector, appointed by a Local Board of Health, that he has inspected certain cattle, sheep or swine within twenty-four hours of slaughtering, be sufficient for the wholesale or retail sale by the carcasses of such animals at some other place?

*Eighth.* Can a butcher be appointed as an Inspector of animals to be slaughtered by himself?

Replying to the foregoing, I have to state:

*First.* The Inspector has no positive knowledge as to whether the animals inspected are really slaughtered within twenty-four hours, nor does the law require that he shall have any information as to this fact. He is required to make inspection, and in his certificate he should state the day and hour of inspection; when he has made the inspection and issued the certificate thereof, as required by law, his duty as to the animals inspected ceases. He could not include the date of slaughter in his certificate, as the law does not require him to keep himself informed as to what becomes of the animals after inspection, but rather depends upon the penalty which it imposes as a guarantee of the compliance with its requirements.

*Second.* Slaughter of animals inspected later than twenty-four hours after the inspection is prohibited by the act, and of course, could not be protected by the certificate.

*Third.* The law prescribes no methods by which Boards of Health, Inspectors, retailers, or consumers can be informed as to whether or not meat offered for sale has been inspected according to law. As stated in my answer to your first inquiry, the law in question depends upon its penal provisions to enforce compliance with its provisions.

*Fourth.* As suggested in my answer to your first inquiry, the certificate cannot well contain a statement that the animal inspected was slaughtered within twenty-four hours, as the Inspector could not know that fact at the time of making such certificate, and is not required by law to keep himself informed as to the ultimate disposition of the animal inspected.

*Fifth.* The description required by law is that the animal should be described, stating kind of animal and sex; but the law makes no provision for verifying the records immediately preceeding slaughter, and if other animals are substituted, the penal provisions of the law must be applied.

*Sixth.* The law requires the certificate to be made in duplicate and one to be given to the party applying for inspection, the other to be filed in the office of the Inspector, and further than this the law makes no provision whatever, for furnishing the Local Board a record or report.

*Seventh.* When the animal has once been inspected, and the certificate has been issued, the animal, if slaughtered within the time required, can be placed upon the market, and the vendor thereof is protected by the certificate, whether the meat be sold at the place of inspection or at any other place.

*Eighth.* There is nothing in the law which prohibits a person from slaughtering animals which he himself may have inspected, provided, if upon such inspection they are found to be fit to be slaughtered for food.

It may be proper to add in this connection, that inquiry has been made as to whether it is necessary to have animals inspected where the meat is not to be sold or offered for sale.

In answer, I would say, that section one (1) of the act in question, prohibits the sale of any fresh meat for human food, except as hereinafter provided.

Section two (2) relates to the appointment and authority of the Inspectors.

Section three (3) makes it the duty of all Inspectors to inspect all animals slaughtered for human food: but,

Section four (4) only imposes a penalty in cases where meat is sold, exposed, or offered for sale for human food.

While these provisions appear inconsistent, it will be seen that while section three (3) makes it the duty of the Inspectors to inspect all animals slaughtered for human food, yet section one (1) only prohibits the sale; and the penalties imposed by section four (4) only apply to such persons as shall sell, expose, or offer for sale meat which has not been inspected.

The law, therefore, contains no provision against the slaughtering of animals without inspection where they are slaughtered for consumption by the party slaughtering the same, and not exposed for sale. I am,

Very Respectfully

MOSES E. CLAPP.

#### LABORATORY NOTES.

**I**MPORTANT CAUTION.—Health Officers and Local Boards of Health who avail themselves of the Secretary's offer to examine samples of water as to their sanitary condition, must remember that the analysis is strictly for sanitary purposes and conditioned on compliance with the requirements specified on the back of the blanks, to be filled and mailed when a sample of water is sent. Copies of the blanks can be obtained of the Secretary.

*Ice Analyses.*—Four samples of ice water were examined for the Health Officer of Duluth, in February. From previous examinations of the Lake currents in relation to sewage, he suspected the purity of the ice taken for domestic use, and stopped operations till the analyses were made.

The result was the condemnation of two samples, and the prevention of further collections where they were taken.

*Spring water* samples have been examined recently for Local Board of Health, of Glenwood, Pope County. This village is very fortunate in its public supply, which is a fine water, needing only careful protection of the spring from surface impurities.

*Well water* samples have been examined from Minnesota Lake, Albert Lea, Owatonna, Rochester, Springfield, Hawk Creek, and the city water supply of St. Peter is now under analysis, and will be reported immediately.

*Domestic filters.*—A few weeks ago the Board of Water Commissioners of the city of Red Wing mounted a single bougie Pasteur-Chamberland Filter in the laboratory with the request that the Secretary examine, particularly as to its adoption for domestic use on the public water supply, which is taken directly from the Mississippi River, filtered coarsely, through sponges, on its way to the pumps, and the reservoir is so arranged as to serve as a settling reservoir by a pipe in the centre which delivers the incoming water, and returns it again to the mains, four feet above the bottom. The following abstract from the Secretary's letter to the Board is of general interest:

"The filter is attached to the same pipe as the laboratory tap, and is under the full pressure of the water (average, 110 pounds to the square inch). Five trials have been made for the duration and rapidity of the filtration (Time taken in minutes for filtration of quantity named).

N <sup>o</sup>	1 GAL.	1 QT.	1 QT.	1 QT.	1 QT.	1 QT.	1 QT.	1 QT.	1 QT.	1 QT.	2d Gal.	2 Gals.
1	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	103	113
2	14	4½	5½	6	8	9	10	12	12	12	67	81
3	20	8	9	11	12	13	16	17	17	17	103	123
4	15	5½	6½	7	9	10	11	14	14	14	77	92
5	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

The first trial was after the filter had stood attached and full of water, but not under pressure. A quart may have been drawn before the trial began, and since the last cleaning.

The second trial was made after cleaning the bougie with soap, tap water, and nail brush, and rinsing with tap water.

The third trial was after thorough cleaning with brush, and distilled water, and gently rubbing the bougie with a clean crash towel.

The fourth trial, after cleaning with a brush, under the tap.

The fifth trial, after washing with a brush in a moderately strong solution of caustic soda, and rinsing thoroughly under the tap.

The pressure was the same, and the faucet of the filter wide open in all the trials. The color of the bougie, after cleaning, was a bright yellow, and it was somewhat worn by the brushing. I am not prepared to account for the variation in the time of the trials. They followed each other and the conditions were the same, except that of the bougie, which was evidently blocked below the surface. The experiments will be continued."

A simple method of water analysis for use of Health Officers.—Several requests have been made to the Secretary to suggest some method of simple sanitary analysis of water by Health Officers. In response to one of these he wrote, "A simple and easy analysis without apparatus and 'off hand' I don't know. I have tried for years to get such a one to meet just such requests as yours. The essential thing is to judge of the character and amount of organic matter in the suspected sample. The mineral constituents of ordinary water are of no consequence except Chlorine, which is present usually as chloride of soda. This you can easily test, and with sufficient accuracy. You will find directions on page 8, March, 1885 No. of PUBLIC HEALTH, a simple nitrate of silver solution is the following:

R Nitrate of silver, (crys. C. P.) xv. grs.  
Distilled water, iv. oz.

and keep in dark bottle or one covered with black cloth or paper. A dram is equal to one-tenth (0.1) grains chlorine, 30 drops = .05, 15 drops = .025, and so on. Dissolve in water enough chromate of potash for iv. oz. solution, use as directed (on page 8. as above). In this way you can get a very fair test for chlorine. If present in more than one grain and a half in ordinary well water, there is reason for suspecting the water to be affected by sewage. Two grains is almost positive evidence. For organic matter, warm a half pint of the water in a clean and well closed bottle, when blood warm, shake thoroughly and smell; if there is a distinct bad odor, the water is to be suspected and more so if a little caustic potash develops or increases the odor. Take of permanganate of potash, ii. grs., distilled water, iv. oz. Fill a tall clear bottle with the water, add carefully just enough permang. potass. solution to give it a distinct pink color, after stirring. If you have a similar bottle of distilled water, treat in same way, for comparison. A very rapid change, repeated after adding more of the solutions is suspicious. Iron would discolorize, so see that pumps are well cleaned before a sample of water is taken. Slightly acidulate a little of the water and add a little of a moderate solution of tannic acid and if iron is present, you get the inky color. I judge a good deal by the behavior of the residue after evaporation (of say, iv. oz. of the water;) if it is white, clean and not discolored when burning or burned, it indicates absence of organic matter, except in minute amount."



THE VITAL PROPERTIES OF CARBONIC ACID.—(Asclepiad first quarter, 1889 republication of a paper read in September, 1870.)

Dr. B. W. Richardson, after eighteen years, reprints this very interesting paper, which is so instructive and judicial in tone that we republish it as the possible explanation of certain conditions of respiration, and certain pathological conditions, which have hitherto been unexplained. He writes:

"Until quite a late period I have accepted the common and universal views in respect to the part played by carbonic acid in living animal bodies; that is, I have looked on the acid as an excrete, a result of animal combustion, and a product, that, being effete and poisonous, requires to be eliminated from the body, so soon as it is formed.

"I have had no notion of any primary or secondary duty that it might perform, nor have I been able to trace out an author who had an idea of that kind, save in regard to the original idea, which may be followed back to Priestley, that the world of plants decomposes the products of animals combustion, utilizing the carbon of carbonic acid and giving back the vital air or oxygen for the animal world to consume as food supplied from air."

By a series of ingenious and simple experiments with fresh blood, he concludes that "as the blood is burned in the body the carbonic acid formed takes some part of the place of the oxygen until the corpuscles are saturated; that is to say, till they take up as much of the gas as they are constituted to carry. Charged in this manner, they reach the lungs in the proper condition to take up the oxygen from the air, in exchange for the carbonic acid which they eliminate. *This explanation suggests that in the process of life the presence of carbonic acid is actually necessary in order that the blood should undergo oxygenation.*"

"I took a specimen of defibrinated blood that had been recently drawn, and placed it under the air pump, so as to extract the gases which were loosely held in it. I then divided it into two equal parts in separate vessels, warmed each to blood-heat, and charged one part with carbonic acid under pressure of five atmospheres. I next filled two ten-ounce glass globes with pure oxygen. Into one of these globes, so filled, I poured four fluid ounces of the blood which had been simply exhausted to a large extent of its gases; and into the other the same quantity of the blood which had been charged with carbonic acid. The globes containing the two specimens of blood, were then closed, and their contents were briskly churned with the oxygen. The results were most distinctive. The blood charged with carbonic acid became, instantly, of bright arterial color, precisely as seen in the previous experiments, whilst the blood uncharged remained virtually unaffected, notwithstanding the most vigorous agitation with oxygen. But if I were now to charge the uncharged blood with carbonic acid, through the oxygen, the carbonic acid under pressure would first combine with the corpuscles and then the oxygen would displace the carbonic acid. The actions seem to be reciprocal, as if carbonic acid in venous were as essential as oxygen is in the arterial blood. From a series of similar experiments on some of the secretions of the body and specially on the mucus secretions of the bronchial passages and throat he found that with carbonic acid under slight pressure and warmth the clear mucus of the natural bronchial surface can be changed into the frothy like secretion of a loose catarrh, or into the dense, stringy-like secretion of chronic bronchitis, or into a membranous secretion like which forms in croup and diphtheria. He adds: "I cannot doubt, in fact but that all the variations of the bronchial and pharyngeal secretions in disease are, indirectly, due to the action of those of carbonic acid, the effect of the gas being to solidify those exudatory products." He also concludes: "The corpuscles supplement the other absorbing influences (as respects carbonic acid gas) equalize, under varying states, the pressure of the gas within the vessels, and prevent tensions which, without such regulation, would be a constant source of danger to life."



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, April 15, 1889.

Monthly Supplement to Report on Vital Statistics. }  
February, 1889. }

(NOTE.—In the following table of death causes.

**Puerperal Diseases** includes *Puerperal Fever*, and *puerperal septicæmia*.

**Diarrhœal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of all, over five years of age.

**Diarrhœal Diseases of Children** includes intestinal diseases, under 5 years, during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pycæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tubercular Mesenterica Hydrocephalus*, and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we have been unable to classify.

**Not Classified** includes deaths from certain specified causes, not included in the report following.

*Deaths from all Causes*.—January, 1887, 747, January, 1888, 1,217; January, 1889, 1,068; February, 1887, 717; February, 1888, 1,220; February, 1889 1,068.

See page 32 for comments concerning mortality from certain diseases.

MONTHLY STATEMENT OF BIRTHS—FEBRUARY, 1889.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO APRIL 15, 1889).

GRAND TOTAL, 1938.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
SEX.	Males .....	51.86	1938	1005	.....	.....
	Females.....	47.67	.....	.....	924	.....
	Unknown .....	.47	.....	.....	.....	9
COLOR.	White.....	99.90	1936	1005	923	8
	Colored.....	.05	1	.....	1	.....
	Unknown .....	.05	1	.....	.....	1
	Legitimate.....	99.80	1934	1003	922	9
CONDI- TION.	Illegitimate.....	.20	4	2	2	.....
	Unknown .....	.....	.....	.....	.....	.....
NO. AT BIRTH.	Single .....	99.18	1922	997	920	5
	Twins .....	.82	16	8	4	4
	Triplets .....	.....	.....	.....	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY.	Both American.....	24.98	484	249	234	1
	Both Foreign.....	57.17	1108	569	535	4
	Am'n Father—Foreign Mother...	5.57	108	58	47	3
	Foreign Father—Am'n Mother...	10.22	198	108	89	1
	Unknown .....	2.06	40	21	19	.....

SUMMARY OF RETURNS OF DEATHS, FOR THAT MONTH, FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Month, 1038.	Total of each Disease.
	10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190	
Small Pox .....		0
Measles .....	21	21
Scarlatina.....	32	32
Diphtheria.....	60	60
Croup .....	22	22
Whooping Cough..	17	17
Typhoid Fever....	25	25
Erysipelas.....	8	8
Puerperal Fever..	8	8
Diarrhoeal Disease	1	1
Diarrhoeal Dis. of Children .....	11	11
Insanity.....	8	8
Convulsions.....	42	42
Other Diseases of Nervous System.	53	53
Cancer .....	19	19
Phthisis .....	93	93
Other Tubercular Diseases.....	10	10
Diseases of Heart.	28	28
Bronchitis.....	58	58
Pneumonia and Pleurisy.....	127	127
Diseases of Urinary Organs .....	13	13
Still Birth.....	51	51
Premature Birth..	12	12
Old Age.....	78	78
Violent Deaths....	36	36
Not Classified....	116	116
Ill-defined and Unknown .....	89	89
Total Males.....		
Total Females....		
Grand Total.....		

OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO APRIL 15TH, 1889).

Per cent. of deaths during the month.	SEX.	SOCIAL STATE.					AGE.												NATIVITY.				PARENT NATIVITY					Localities Invaded Counties.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
		Males.	Females.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.	Other Minnesota.	Other U. S.	Foreign.		Unknown.	Both American.	Both Foreign.	American Father.	Foreign Mother.	Foreign Father.	American Mother.	Unknown.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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## MINNESOTA.

DISEASES, DISTRIBUTION AND MORTALITY IN FEBRUARY, 1889,  
COMPARED WITH PRECEEDING MONTH, AND THE SAME MONTH  
IN OTHER YEARS.

	1887.	1888.			1889.					
	Feb.	Feb.			Jan.			Feb.		
	Deaths.	Deaths.	Localities.	Counties.	Deaths.	Localities.	Counties.	Deaths.	Localities.	Counties.
Measles.....	17	9	6	5	22	19	16	21	19	15
Scarlatina.....	26	14	9	7	25	18	15	32	21	17
Croup.....	21	27	18	12	26	20	15	22	16	15
Diphtharia.....	48	73	37	25	75	37	24	60	26	19
Typhoid Fever.....	15	35	19	17	32	20	19	25	18	17
Diarrhoeal Dis's of Children	9	11	5	5	21	7	6	11	10	9
Phthisis.....	60	101	56	33	91	52	43	93	63	40
Bronchitis.....	31	33	17	15	37	14	12	58	23	21
Pneumonia.....	57	102	59	35	84	57	35	127	72	42

*Measles*—About stationary, both as to mortality and distribution; although greater number of deaths than in same month last year.

*Scarlatina*—Increase in mortality and distribution, and greater mortality than in same month, 1888.

*Croup*—A decrease in mortality from previous month, and same month last year.

*Diphtheria*—Decided decrease in mortality and distribution, from previous month and corresponding month of last year, but an increase over same month in 1887.

*Diarrhoeal Diseases of Children*—Decrease in mortality, but increase in distribution. Same mortality but greater distribution than in same month last year.

*Phthisis*—About stationary as to mortality, but increase in distribution. A decrease in mortality, but distribution greater than in same month last year.

*Bronchitis*—Increase in mortality and distribution over previous month, and same month last year.

*Pneumonia*—A decided increase in mortality and distribution over previous month and corresponding month in 1888.

MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, May 15, 1889.

Monthly Supplement to Report on Vital Statistics, }  
March, 1889.

(NOTE.—In the following table of death causes.

**Puerperal Diseases** includes *Puerperal Fever*, and *puerperal septicæmia*.

**Diarrhoeal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of over five years of age.

**Diarrhoeal Diseases of Children** includes intestinal diseases, under 5 years during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tubes Mesenterica*, *Hydrocephalus*, and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we have been unable to classify.

**Not Classified** includes deaths from certain specified causes, not included in the report following.

See page 32 for comments concerning mortality from certain diseases.

MONTHLY STATEMENT OF BIRTHS—MARCH, 1889.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT MONTH FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO MAY 15, 1889).

		GRAND TOTAL, 1942.*	PER CENT.	TOTAL.	MALES.	FEMALES.	UN-KNOWN
SEX.	Males .....	52.58	1841	968			
	Females.....	47.26				870	
	Unknown .....	.16					3
COLOR.	White.....	99.95	1840	968	869	3	
	Colored.....	.05	1		1		
	Unknown .....						
CONDI-TION.	Legitimate.....	99.73	1836	967	866	3	
	Illegitimate.....	.27	5	1	4		
	Unknown .....						
	Single .....	98.92	1821	955	863	3	
NO. AT BIRTH.	Twins .....	1.08	20	13	7		
	Triplets .....						
	Unknown .....						
PARENT NATIVITY.	Both American.....	28.04	516	284	230	2	
	Both Foreign.....	55.35	1019	528	490	1	
	Am'n Father—Foreign Mother....	5.37	99	50	49		
	Foreign Father—Am'n Mother....	9.07	167	82	85		
	Unknown .....	2.17	40	24	16		

\*Includes 101 received too late for classification in this table.





OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO APRIL 15TH, 1889).

Per cent. of deaths during the month.	SEX.	SOCIAL STATE.					AGE.															NATIVITY.					PARENT NATIVITY					Localities Invaded	Counties.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		Males.	Females.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.	Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.	Both Foreign.	American Father. Foreign Mother.			Foreign Father. American Mother.	Unknown.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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## MINNESOTA.

THE MORTALITY AND DISTRIBUTION OF SPECIFIED DISEASES FOR THE MONTH OF MARCH, AND THE FIRST QUARTER OF 1889, COMPARED WITH PRECEDING MONTH, AND SAME MONTH AND QUARTER OF OTHER YEARS.

	1887. Mch.	1888. March.			1889.						First Quarter.	
		Deaths.	Localities.	Counties.	Feb.			March.			1888.	1889
					Deaths.	Localities.	Counties.	Deaths.	Localities.	Counties.		
DEATHS FROM ALL CAUSES	*927	†1878			†1074			1091			3815	32 3
Measles .....	27	15	9	7	21	19	15	32	24	18	29	75
Scarlatina .....	27	13	8	8	32	21	17	24	18	14	43	81
Croup .....	13	24	16	13	22	16	15	18	14	13	72	66
Diphtheria .....	23	55	28	21	60	28	19	64	23	17	245	199
Typhoid Fever .....	19	36	18	17	25	18	17	32	21	17	128	89
Diarrhoeal Dis's of Childr'n	12	5	4	4	11	10	9	12	5	5	24	44
Phthisis .....	99	121	77	50	93	63	40	92	57	37	322	276
Bronchitis .....	40	56	29	25	58	23	21	45	20	17	126	140
Pneumonia ..	68	117	56	34	127	72	42	103	54	35	316	314

\*Below the truth, because the present Vital Statistics law went into operation on the 8th of March, 1887, and the returns were imperfect for the first quarter.

†Corrected to May 1st, 1889. The additions since May, 15, 1888, to the return for March of that year, were 190, of which but 15 were deaths from infectious disease. The additions to the February, 1889, return, have been 36, of which but 2 were deaths from diphtheria.

*Measles*—Double the mortality and more than double the distribution of March, 1888. There was a sudden increase in distribution and mortality in 1888; beginning in March, at its height in May, and gradually declining till the mortality of August was about that of February.

*Scarlatina*—Decline in mortality and distribution since last month, but greater mortality than in any month of 1888. It was less than measles for the whole year of 1888, and for this month.

*Croup*—A steady decline since December, 1888, in distribution and mortality, and less than for this month last year.

*Diphtheria*—A slight increase in mortality, but diminished prevalence as compared with last month; greater mortality than in March, 1888, but much more limited distribution.

*Typhoid Fever*—An increase in distribution and mortality as compared with last month, and about the same as in this month last year.

*Diarrhoeal Diseases of Children*—Mortality small; distribution diminished.

*Bronchitis*—Diminished mortality and prevalence as compared with last month, and for this month of 1888.

*Pneumonia*—Less mortality and distribution than last month; less mortality, but almost the same distribution as in March of last year.

# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

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VOL. V. NO. 4.

JUNE, 1889.

WHOLE NO. 52

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF MAY, 1889.

### DISEASES OF MEN.

Diphtheria.....	}	cases, 86
		deaths, 23
Scarlatina.....	}	cases, 119
		deaths, 7

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	18
Reported during the month.....	23
Killed.....	8
Released.....	0
Isolated.....	15

Remaining June 1st, 1889, isolated or not accounted for..... 33

NOTE.—Most of these are cases exposed, and isolated for further observation.

## DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF MAY, 1889, AS REPORTED UP TO JUNE 20.

(Population, estimated 1889, cities over 2,000 inhabitants, 530,000; towns and village, 1,047,860.)

Total number deaths, 847, against 832 last month; 429 males, 418 females; 51.82 per cent. occurred in cities of over 2,000 population. Ages, under 1 year, 26.9 per cent.; 1 to 5 years, 15.4 per cent.; 5 to 15 years, 10.3 per cent.; 15 to 30 years, 10.7 per cent.; 30 to 50 years, 13.9 per cent.; 50 to 70 years, 12.4 per cent.; over 70 years, 8.6 per cent. Of 229 deaths under 1 year old, 54.5 per cent. were in cities; from 1 to 5 years, 44.2 per cent.

*Measles*.—17 deaths (10 males, 7 females), in 17 localities, 11 counties. All but one occurred in towns and villages. An increase over last month, both in mortality and distribution. Ages, under 1 year, 35 per cent.; between 1 and 5 years, 41 per cent. One male between 30 and 40, from complications.

*Scarlatina*.—33 deaths (13 males, 20 females), in 18 localities, 10 counties. 39 per cent. occurred in cities. Ages, 66 per cent. under 5 years; 27 per cent. between five and 10 years. Mortality about the same as last month, but the distribution was less.

*Diphtheria*.—60 deaths (27 males, 33 females), in 20 localities, 11 counties. 63 per cent. occurred in cities. Ages, 51 per cent. under 1 year; 33 per cent. between 5 and 10 years. A decrease compared with last month, both in mortality and distribution.



*Croup*.—10 deaths, (7 males, 3 females) in 8 localities, 4 counties; 40 per cent. occurred in cities. Ages, 70 per cent. under 5 years; 30 per cent. between 5 and 10 years. About half the mortality and distribution compared with last month.

*Typhoid fever*.—19 deaths (12 males, 7 females) in 9 localities, 4 counties. 73 per cent. occurred in cities; ages, 26 per cent. between 5 and 15 years; 36 per cent. between 15 and 30 years. Compared with last month mortality about stationary, but distribution less.

*Diarrhœal diseases of children*.—18 deaths (11 males, 7 females) in 8 localities, 5 counties. 72 per cent occurred in cities. Ages, 77 per cent. under 1 year; 23 per cent. between 1 and 5 years. An increase in mortality and distribution compared with last month.

*Bronchitis*.—19 deaths (11 males, 8 females), in 8 localities, 5 counties. 73 per cent occurred in cities; ages, 52 per cent. under one year; 31 per cent. between 1 and 5 years. About stationary as compared with last month.

*Pneumonia*.—55 deaths (30 males 25 females), in 30 localities, 24 counties; per cent 61 occurred in cities; ages, 18 per cent. under one year; 30 per cent. between 1 and 5 years; 9 per cent. between 5 and 15 years; 12 per cent. between 15 and 30 years; 10 per cent. between 30 and 50 years; 18 per cent. between 50 and 70 years. A continued reduction in mortality and distribution as compared with previous months.

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DANIEL W. HAND, M. D., PRESIDENT OF THE STATE BOARD OF HEALTH OF MINNESOTA, died at his home in St. Paul, on the evening of Saturday, June 1, 1889. The minute adopted by the Board, is the expression of our sense of a loss, personal and official, not to be stated in words. A memoir is in process of preparation, but for lack of a portion of the data, will be published in our next number.

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MINUTE ADOPTED BY THE STATE BOARD OF HEALTH OF MINNESOTA, AT A SPECIAL MEETING HELD AFTER THE FUNERAL OF DR. D. W. HAND, LATE PRESIDENT OF THE BOARD, IN ST. PAUL, TUESDAY, JUNE 4, 1889.—The State Board of Health of Minnesota, with profound and sincere sorrow, makes this record of the loss by death of D. W. Hand, M. D., its member since organization in 1872, and its President since 1873. Though engaged in a large and increasing private and consultation practice, Dr. Hand promptly and zealously accepted membership in the Board and in his address at its first meeting took the position which he maintained steadily to his death. "It remains," said he, "for us, the representatives of the third State to adopt this wise plan of guarding the public health, to prove our



fitness for the task imposed. To it we must bring, not only the willingness to labor long and faithfully in acquiring information, but also to disseminate in every possible way the latest and best views of hygiene and prophylactic medicine."

His wide and influential acquaintance with his professional brethren and representative men in all stations of life, enabled him to bring to our aid from the beginning, a powerful support, which has steadily increased, and was largely instrumental in winning that popular confidence which the Board now has, and which was a source of pleasure and comfort to him when failing health warned him that his work was nearly done.

In the daily duty of the Board, which now touches so many personal and public interests, and involves often varied and delicate questions of duty and policy, Dr. Hand's knowledge of men and methods, his ready tact, courtesy and integrity, never failed us. Even during the last five years, though suffering constantly and with increasing physical weakness and discouragement, Dr. Hand did not falter in his devotion to this part of his life work, but was as active, vigilant and efficient up to within a few weeks of his death, as ever before.

His cheerful confidence and courage, his gentle persistence in meeting and surmounting obstacles, his zeal for knowledge, and his happy faculty for assimilating and using it, above all, his manly fortitude at the end, made his life in many ways an example of living, doing, enduring and winning, rarely found in the Profession which he dignified, honored and loved.

We cannot express in this formal way the feeling of personal loss which oppresses us. Its weight is heavy and increasing. A memory of more than sixteen years of intimate personal association in which, on his side, nothing has occurred to regret, in which our regard has increased to affection, our confidence to absolute trust, cannot be told in words. That he knew it, it is consolation to believe.

We offer to his widow and his children this just tribute, inadequate but heartfelt, to one, who, in every relation of his busy life, was a noble, and a gentle, man.

---

HOW TO GET LOCAL BOARDS INTO PROMPT AND EFFICIENT CONFERENCE IN EMERGENCY, was demonstrated the other day at Farmington, Dakota county. Dr. Dodge, Health Officer of Farmington, two days before the meeting, called attention to the

lack of co-operation between the Township Boards in the control of scarlatina. The Secretary issued by telegraph and special messenger a call to eight Township Boards to meet him at Dr. Dodge's office at 9 a. m. next day, Tuesday, June 19. Though the notice for the one farthest off was not more than twelve hours, every Board was represented. All expressed themselves glad that the secretary had called them. They plied him with questions, discussed mutual responsibilities, and the control of the present outbreak of scarlatina, agreed on prompt mutual notification of infectious diseases and to enforce notification of those diseases by Physicians and Householders, prompt and thorough isolation of the sick of such disease, and private burial of the dead, with careful disinfection after the termination of the disease. When the Secretary left, before the conference adjourned, the representatives were enthusiastic as to the advantages of such impromptu gatherings. With the assistance of Dr. B. J. Merrill, Health Officer of Stillwater, the Secretary will hold a similar Conference with the Local Boards of Health of Washington and Chisago counties, at Stillwater, July 2. The morning and afternoon sessions being devoted to business, study and explanations of the Sanitary Laws of the State, the removing of doubts and difficulties as to their execution, and the cultivation of mutual acquaintance and co-operation between the Boards, the evening to popular addresses on Sanitary subjects.

---

**V**ACCINATION.—The English government has appointed a Royal Commission to review the whole subject, on complaint of a noisy and persistent, but very small body of objectors. Those of us, who have, over and over again, tested the inestimable value of Jenner's discovery, not with individuals alone, but with whole communities against epidemic small-pox, and have never found our confidence misplaced, cannot understand the need of such an inquiry.

Fortunately the conditions are different in this country. We rely, in Minnesota at least, upon the average intelligence of our people, and, in the experience of the writer, there never has been a time, in the last sixteen years, when any portion of our population has refused vaccination, or when it could not be said with truth that the people were overwhelmingly in favor of the practice. Individuals object; a few practitioners of medicine oppose it; but the vastly greater proportion of the people demand it, and Health Officers and physicians have little else to do than to select the virus and to use it.

---

**I**NFECTIOUS DISEASE, FROM THE STANDPOINT OF A BACTERIOLOGIST.—Koch's address to army surgeons last fall, is peculiarly interesting because of his position as the representative of the most advanced and reliable bacteri-

ologists. We translate from the *Revue d'Hygiene*, that part of his remarks which refer to ventilation, water supply and disinfection.

"The most important thing is to prevent micro-organisms passing from a moist to a dry and powdery condition, for it is in this way that they get into the air. If the suggestion is impracticable we must remove the dust from human habitations, at the earliest possible moment after its occurrence, by currents of air strong enough to take it out into the open. The dust containing the germs thus distributes itself into such great volumes of the open air that the danger of infection becomes very slight.

The removal of the dust suspected to be infected with specific bacteria is the chief object of ventilation, in places containing persons suffering from infectious diseases. The removal of the various gaseous products, which was hitherto the end and object of ventilation ought not to have, hereafter, other than a secondary importance."

Dr. Vallin, the editor of the *Revue d'Hygiene*, criticizes this statement as going too far, and quotes the experiments of Brown-Sequard and d'Arsonval, who have shown that the air expired by man contains a chemical substance, probably ptomaine or leucomaine, which rapidly kills the lower animals, into whom it has been injected, and that the same result follows though the water of condensation from the expired air, has been submitted to repeated boilings, thus effectually destroying any germs or spores which it may contain.

*What is the relation of the soil to the propagation of microbes?*—In the same lecture Dr. Koch said: "The soil has no influence on the multiplication of bacteria, except in its superficial layers. So that we need not concern ourselves except with the surface, and particularly with its conditions as respects moisture. A dry soil, though soiled by decomposing substances, (not infections) is not dangerous. On the other hand, a damp soil, though apparently pure, always contains, near the surface, enough organic matter to supply nourishment for the growth of micro-organisms. Infectious germs are not able to go to the depths of the soil, with a single exception, and that is where they can reach the subsoil water level, either through fissures or through layers of gravel or round pebbles, which cannot stop their passage as a filter; then if this circulates across coarse layers, the microbes may reach springs. Aside from this, it is of little importance to know whether these deep layers of the soil are fouled or not, or what is the flow of the water which contains them. All the hypotheses upon what passes in the layers of the soil near the soil water; upon the descent of the germs to this level, their development, and the ascent of the microbes which come up with the air of the soil, or with the water of springs; none of these agree with the phenomena which observation has taught us in a positive way, respecting the soil and its superficial layer. Therefore these hypotheses ought to be abandoned."

This is the position of Koch and the Prussian health authorities, as against Pettenkoffer and his institute of hygiene at Munich. Koch's position is more positive and dogmatic than certain or proven.—*Vallin*.

Koch makes much of the danger of carrying disease germs into dwellings in mud attached to foot-wear, boots or shoes, and of the fact that wind and rain carry germs from the surface soil into fountains and springs, which makes the running or stagnant water, and that of cisterns and reservoirs, in the open

air suspicious. We ought to use the natural filtration of the soil, either in the springs, or by tapping the deep soil water with the "drive well." The ordinary wells, though stoned up and cemented, are no protection against infiltration. Dr. Koch stated that he did know of a portable filter, able to furnish rapidly, a sufficient quantity of potable (i. e., germ-free) water. He claims that when water has been thoroughly deprived of germs by filtration, its chemical composition is a secondary matter.

*Management of an Outbreak of Infectious Disease.*—In the same lecture Dr. Koch is quoted as saying: "When an outbreak declares itself it is of the utmost importance to discover the first cases of the disease, which may be compared to sparks falling on a thatched roof. It is easy to put out the first spark, but when the straw catches, the fire is soon beyond control. Modern prophylaxis, based on microbiological theories, consists in crushing the germ at the outset of the disease; when the germs have been widespread their control (surveillance) is impossible.

"Excrements and other liquid products, as well as soil upon which they have been poured, should be treated with phenol or quick lime, which render them harmless. The walls and ceilings of inhabited places can be easily disinfected by frequent whitewashing with milk of lime."

## A DULTERATIONS OF FOOD.—WHAT ARE THEY? HOW TO DETECT THEM? (Continued from May number.)

*Adulterations of Coffee.*—The English papers are discussing a supposed new fraud in this direction. The London *Lancet*, quoting a Liverpool paper, states that a firm of coffee dealers in Germany are manufacturing an imitation of coffee berry from a mixture of chicory and other ingredients made into a paste, and moulded by machinery adapted to the purpose. It is claimed to be successfully used for admixture with the real coffee bean.

It cannot be anything but a clumsy fraud, and we note it only to impress the importance of buying the green berry and roasting at home. If you must buy the roasted berry examine it when you buy. There need be no difficulty in detecting the fraud above referred to. Chicory is very hygroscopic and would break up into paste again if you put it in water, or held a berry in the mouth a moment. The genuine berry has a well-known brittle fracture and resists grinding, the powder is granular and yields a color to cold water very slowly. The very reverse of this is true of chicory.

(TO BE CONTINUED.)

## DISEASES OF DOMESTIC ANIMALS.

A CTINOMYCOSIS (LUMPY JAW) IN MAN.—Prof. Crookshank has recently demonstrated before the Royal Medical and Chirurgical Society, what seems to be a truer pathology of the disease than that hitherto held. He shows that it is really a fungus of which the clubbed-shaped rays, already well recognized, are the fruit.

He made successful cultivation in nutrient media, and by inoculation experiments proved the identity of the human and bovine forms of the disease—the last in cattle known as "lumpy jaw."



The most serious matter from our stand-point is his claim that the disease is one of the most common in cattle in England, and the true cause of a multitude of affections classified under various names by Veterinarians. We have asked for information of the Bureau of Animal Industry as to whether it is likely that this statement may be true of any cattle in this country, where they are, and how to avoid or exterminate the disease.

### LIVE STOCK INSPECTION.

May 22 Secretary submitted the following to Attorney General:

The following questions under dates May 18 and 20, have been asked of this Board, by Local Boards of Health. Will you kindly advise me what to reply?

(1) A man living in one town is a near neighbor of the Inspector of Cattle, etc., of an adjoining town. The Inspector of his own town lives six miles from him. Can he have his animals legally inspected by his neighbor, who is Inspector for the adjoining town, or must he travel six miles to secure the Inspector of his own town?

(2) Does the Town Board receive pay for their meeting to appoint Inspector?

(3) Does the Inspector file an oath as other officers, or simply letter of acceptance of the office?

(4) Are the Inspectors appointed by warrant as other town officers are?

(5) Does the Inspector give bonds?

And received the following reply:

STATE OF MINNESOTA,  
ATTORNEY GENERAL'S OFFICE.  
ST. PAUL, May 24, 1889. }

*Dr. Chas. N. Hewitt, Red Wing, Minn.*

DEAR SIR:—Your favor of the 23d inst. is at hand. Your first inquiry practically involves the question as to whether cattle must be slaughtered in the district where they are inspected, and I am inclined to think that under the terms of the law they should be slaughtered in such district, that is that they cannot be inspected in one district and slaughtered in another. This need not work any particular hardship as there is no limitation placed upon the Board of Health as to the number of inspectors to be appointed, and they can appoint a sufficient number of inspectors located in various parts of the township so as to, in a very large degree, at least, lessen the burden, making the matter of inspection fairly convenient.

Section 86, of chapter 10, of the general statutes of 1878, regulates the fees of town officers, and the provisions of that section apply to all services rendered by said officers, subject, of course, to the limitations contained in such section. No provision exists for filing an oath of office on the part of the inspector, or giving bonds. The penal provisions of the law relating to the inspectors evidently being designed to secure compliance with the requirements of said act so far as it relates to the duties of the inspectors. Neither is any particular form of warrant of appointment required by the law in question.

After advising in some cases that it was not necessary to have animals inspected which were slaughtered for home consumption, I discovered that you had rendered an opinion to the contrary. I regret very much this difference of



opinion, but from an examination of the law it seems to me beyond question that it is not made a criminal offense to slaughter animals for home consumption. The law starts out with the prohibition against the sale of meat except as provided for in the act. Section two provides for the appointment of inspectors; section three relates to the duties of inspectors, and section four prescribes the penalties for the sale of meat from animals which were not inspected before slaughter. It is true that section three makes it the duty of the inspector to inspect all animals; but the entire act should be read together. The object of the act, as appearing from its terms, is to prohibit the sale of meat which has not been duly inspected, and section three should be read in the light of this manifest purpose of the act.

Again, even if there is an inconsistency between the terms of sections one and four, and section three, inasmuch as section four only makes it a misdemeanor to sell, or offer for sale, flesh from animals which were not inspected, and it being a familiar rule of law that offenses cannot be created nor penal statute enlarged by implication, it would follow that it would only be an offense to sell, or offer for sale, the meat of an animal which had not been inspected.

I am very truly yours,

MOSES E. CLAPP.

Attorney General.

### SANITARY QUESTIONS AND ANSWERS.

[T. C., abbreviation for Town Clerk; C. B. H., for Chairman Board of Health; H. O., for Health Officer; L. B. of H., for Local Board of Health.]

*Inquiries as to "Inspection" law.*—Geo. W. Haight, Sec'y State Farmer's Alliance and C. B. H., Mankato, (Tp.) Blue Earth Co., asks the following questions concerning the law providing for inspection of animals twenty-four hours before slaughter. *First*—"Have inspectors appointed by the Local Boards of Health where slaughtering houses are located, jurisdiction, or the inspectors of the city where the meat is offered for sale?" Secretary replied, "See Sec. 2 of the law and opinion of Attorney General." *Second*—"Have inspectors authority to order the destruction of diseased animals other than those offered for slaughtering as human food?" Secretary replied, "No," but L. B. of H. have, under Chap. 200, Laws of 1885, and are bound to see it enforced."

*Can vaccination be enforced?*—Dr. Landenberger, H. O., New Prague, inquired: "Can a L. B. of H. enforce vaccination?" Secretary replied, "When small pox exists your Board can enforce vaccination indirectly by isolating all those who are not satisfactorily protected by vaccination and have been exposed to infection. Your School Board can, upon your recommendation, require a certificate of vaccination before admitting scholars into the schools, as is done in several towns. This I advise."

*Inquiries as to law providing for inspection of stock twenty-four hours before slaughter for human food.*—C. Nelson, Act. H. O., Osakis, asks the following questions: "What qualifications are necessary for inspector? What remuneration is allowed them and by whom paid? What does the inspection consist of? Can member of L. B. of Health hold the office of inspector?" Secretary replied: "The law provides no necessary qualifications for inspectors. Compensation and fees are regulated by the L. B. of Health. Sec. 5 of the law prescribes the points of inspection. The law contains no statement which would bar a member of the L. B. of H. from being appointed inspector."

*Is the H. O. secretary of the L. B. of H.?*—Dr. W. F. Holden, H. O., Ashby, Minn., inquires: "Is the H. O. necessarily the secretary of the B. of H. over which he presides?" Secretary replied. "The law does not provide for a sec-

retary to the L. B. of H., and when that office has been assumed by any one, it is not sanctioned by law, but may be, I suppose, by city ordinance for local purposes. The H. O. is the Executive Officer of the Board, and the party upon whom this Board depends for reports, and to see that the laws are enforced. However, he has no distinct authority except that conferred upon him by his Board, and they are therefore responsible for his actions."

*What is the duty of a L. B. of H. with a filthy family?*—A. C. B. H. writes: "The family that created diphtheria in this town last summer is as corrupt and dirty as they were then. Complaint has been entered by citizens to have them cleaned out. What can the Board do?" Secretary replied: "If the family are simply *filthy*, you may forbid their children school and themselves public meetings till clean, but if there is infectious disease, then there is no doubt of your duty. All cleaning up necessary should be by themselves for themselves, except when you interfere for infectious diseases."

*A model report from a chairman—Diphtheria in his own family.*—W. L. Davies, C. B. H., Angus, (Tp.) Polk Co. reports: "As required by law, I report to you that diphtheria in a mild form has broken out in my family. The first case, aged seventeen years, was pronounced by the attending physician as a case of severe sore throat. The second case, aged nineteen years, pronounced by the doctor at first sore throat, same as first case, but the third day he called it diphtheria. Third case, aged eight years. We have taken every precaution since the first appearance of the disease to prevent its spread outside the family, but I think it is now necessary to have the family duly quarantined, and write you to instruct me as to the duties of the Board of Health. Please send me all blanks and instructions, and in the meantime we will use all possible precaution and keep ourselves confined to our own place, and forbid all outside intercourse. I wish the most rigorous measures to be taken in this case, so that should any more cases appear we may know just what steps to take." Secretary immediately congratulated him upon his report, and sent a full file of circulars, laws, etc.

*Prompt dealing with a case of glanders.*—The Health Commissioner of Minneapolis, May 25, reported a case of glanders which has been secreted in his city for some time and which was finally removed to Anoka. This report was received May 26 (Sunday, 4:30 p. m.). May 27, Secretary notified H. O. of Anoka, of the facts as above, and he reported May 29: "Received your communication 9 a. m. (May 28). Found and examined the horse referred to and had him killed and buried before 2 p. m."

*A gratifying report from a H. O. in the Northwest portion of the State.*—Dr. J. R. Finney, H. O., Stephen, writes May 28: "In answer to your inquiry regarding glanders I would say that we have had two horses shot here, one on the 26th of last month and one yesterday. We fumigated and whitewashed the stable carefully according to directions sent out by the State Board, burning a good deal of material, harness, halters, etc., and burying the animals in quick lime. Several other horses were killed by the Town Board also, and that Board has worked with the Village Board to stamp out the disease. We are meeting with the heartiest kind of support from the people, and we are duly grateful for the efficient instructions and support we receive from the State Board. The State Board of Health is a very popular institution in this section of the State."

*Is there danger from a cemetery located near a church?*—Thomas Alford, C. B. H., Lambert, (Tp.) Polk Co., writes: "Our grave yard is only a few feet from the church. Some have complained of it as dangerous, as those dead of infectious diseases are buried there. What is best to be done?" Secretary replied: "No grave yard should be located in a locality where the soil water is above six feet below the surface of the ground. Such places should be located upon high and isolated ground, preferably sand or gravel, and at least one half mile from human habitation. I do not believe that bodies of children dead of diphtheria, who have been buried two years, would still contain the infection of that disease, but it should be a rule with very rare exceptions, never

to allow such bodies to be removed from their graves. The location of cemeteries near churches in suitable grounds, and with proper regulations, is not, to my knowledge, harmful. A well, as sometimes happens in such places, is a standing danger."

*Membraneous croup and diphtheria.*—May 23, Dr. E. S. Frost, H. O., Willmar, writes: "In April John T. died of pneumonia. Several days after this his brother Torkel, six miles distant, was found moribund by Dr. Schuman, who told me he was too advanced to be sure, but diagnosed pneumonia. He found at the same time, in the same house, two children with croup, both of whom died within a few hours. He did not report them. On the following Sunday the widow of John T. attended the funeral of these children dying of croup, and on the Wednesday following I saw her son, aged about eleven, with symptoms of membraneous croup. It would seem to have been communicated. I believe membraneous croup to be identical with, or another name for diphtheria. I endeavored to quarantine my case, which died, I am told, on the following Saturday. I assured the mother of danger, pronounced it diphtherotic croup and enjoined isolation. I have heard of no more cases.

I think the absence of fetor in membraneous croup is due to the lack of tonsillitis. In ordinary diphtheria tonsillitis is virulent and fetid, and here all the difference lies. It also seems to me that isolated diphtheria is not as contagious as when arising in groups, hence, in form of membraneous croup not seeming contagious. I have known membraneous croup and diphtheria in the same family and house. Torkel and John T. were men past middle life, not children. *Supplementary, June 5, 1889*—I might supplement the cases reported with the following: I was called some years ago to see two children, boys, of about seven and nine years, respectively, who had been treated by their parents for croup for two or three days. On examining I found diphtheretic exudation just appearing in sight on posterior wall of pharynx in both cases. They would not listen to tracheotomy and within thirty-six hours they were both dead. Diphtheria was prevalent at the time. During the same epidemic I found a case of croup with all the other children in the family with diphtheria. In all of these cases of croup, which were to my mind undoubtedly diphtheria, there was no fetor. The two boys dying within a few hours of each other in the same family and the single case with diphtheria all about it are all strongly suspicious of contagion.

### MAY INSPECTION REPORTS.

HERMAN, (Tp.) ST. LOUIS COUNTY, GOTTLIEB FRITZ, T. C., MAY 5, 1889.—You are hereby notified that the local Board of Health, met on the 4th day of May, 1889, after inspecting and examining the town for sanitary purposes. They found everything in good order and healthy, and the Board agreed to take the greatest care, if any infectious disease breaks out in this town.

HOUSTON, (V.) HOUSTON CO., MINN., DR. H. P. JOHNSON, H. O. MAY 30, 1889.—On May 27 I made an inspection of the village and found it, with a few exceptions, in a sanitary condition. Found one filthy pig-pen, and the alleys in a few places filthy. A general order has been given to clean up and a special (individual) order where thought necessary. In a few days the necessary cleaning will have been done.

ATWATER, (V.) KANDIYOHI CO., DR. J. S. GIBSON, H. O. MAY 15, 1889.—At this rather late date I am able to report the sanitary condition of our village as quite good. Manure piles and garbage generally have been removed and out houses generally are in a comparatively good condition.

The past year has been a favorable one for us. We have not had much sickness and but few deaths. We have not been visited by any epidemic of disease, except the mild one of scarlet fever, which is now among us, and with proper care I hope we will soon be rid of it without leaving any unpleasant results behind. We have reason to be thankful that after several years of effort we have finally succeeded in getting our sloughs so thoroughly drained, making our homes much more pleasant and healthful, and I trust that through the faithful discharge of our duties as a Health Board, still more improvements may be made conducive to the general interests of the neighborhood.



MARSH GROVE, (TP.) MARSHALL CO., THAM KOLSTAD, C. B. S., MAY 27, 1889.—I hereby certify that I have inspected all the dwelling and outhouses in town of Marsh Grove. There was no case of sickness; all the inhabitants are in good health. I found no diseased animals, and where there was anything that I thought was necessary to be done, or removed, such as manure heaps or airing the cellar, all of them seemed willing to do it and endeavor to prevent disease.

LAKE CRYSTAL, (V.) BLUE EARTH CO., DR. W. R. CULLEN, H. O., MAY 28, 1889.—May inspection found our village in a fair sanitary condition, with the exception of a few low places containing stagnant water. These are under control of the village board, the property belonging to the village) and they have promised to abate them as soon as possible by either filling or drainage.

There seems to be no cause for complaint so far this season, and should any arise, with the hearty support of the village Board and the people in general, any nuisance can be easily abated. Thus working in harmony we have never found it necessary to resort to legal measures to enforce any order from the Board of Health. We had an epidemic of measles in our village during the past winter and spring, there being nearly 100 cases. All recovered.

During the year ending May 1, 1889, there were reported twenty-four (24) births and (12) twelve deaths as follows: Consumption (2) two, pneumonia (2) two, hemorrhage of lungs (1) one, orrriage of stomach (1) one, angina pectoris (1) one, accident (1) one, infantile debility one, typhoid fever, (1) one, cancer, (1) one, spasms (1) one.

LAKE BENTON, (V.) LINCOLN CO., DR. W. WAKEFIELD, H. O., MAY 9th, 1889.—The order to clean up and remove all sources of filth has been pretty generally observed, and most of the manure and garbage has been removed to a safe distance from the city limits. With one or two exceptions the village is in a very good sanitary condition, and they are being attended to as fast as possible.

The practice of occasionally slaughtering hogs within village should be strictly prohibited. The condition of the privies are not altogether satisfactory and should be further investigated. The water supply seems to be healthy and good. During the year past there have been no epidemics of any kind except of measles in a very mild form.

KENYON, (V.) GOODHUE CO., DR. G. H. OVERHOLT, H. O., MAY, 15, 1889.—The sanitary condition of our village is very good, all things considered. The worst feature to be overcome is the hole in the ground privies. I know of but one water closet, and that one belonging to the Commercial Hotel, where provision is made for carrying off the excreta. In this instance a box is used, which, when partially filled, is drawn away by a horse, and its contents thrown upon a field.

While the dry earth closet is preferable, no doubt this box arrangement is far in advance of the hole in the ground vault. On account of the kind of subsoil—blue clay—it is hoped that the town will soon construct more sewers and drains to carry off the water, which in some seasons, at least, remains in the cellars until pumped out.

Manure, garbage, etc., all pretty well cleared away.

ST. VINCENT, (V.) KITSON CO., A. SCHMID, ACT. H. O., MAY 21, 1889.—In compliance with Chapter 132, Laws of '83, I make the following report of the sanitary condition of the village:

Upon inspection, I found that the sanitary condition of the village is in a fair state, and that, with a few exceptions, the refuse of vegetable and animal matter, which accumulated during the winter, has been removed and generally cleaned up.

LE SUEUR, (C.) LE SUEUR CO., DR. W. H. FISHER, H. O., MAY 17, 1889.—"There were in our city, sixty-five births and forty-two deaths. Out of 120 cases of scarlet fever, strange to say, there has not been a single death and none have been left with any chronic ailments, neither has there been a single case of diphtheria or typhoid fever reported. The Health Officer has received 110 complaints from various citizens on account of nuisances, and in nearly every instance he has replied in person. City in a very healthy and neat condition, nearly all the refuse and debris in all the alleys and about the streets, having been removed, while the wells, cellars and privies, as far as can be ascertained, are all in fine condition. The grounds and privy at the Washington school building are all in perfect condition, and the same can be said of the St. Ann school building. But, while the Principal at the old school building has done all he could to make it healthful, one can not but feel dissatisfied with the condition of the privy and the lack of perfect ventilation in the building. There certainly is no way to ventilate. The several physicians are commended for promptly reporting infectious diseases and for the valuable aid in keeping said diseases quarantined. The Board heartily thanks the citizens for

their universal willingness in obeying the sanitary laws, which has aided greatly in retaining such a healthy condition of our city.

NEW ULM, (C.) BROWN CO., DR. J. L. SCHOCH, H. O., JUNE 1, 1889.—In accordance with law the Board of Health hereby submits a report of its observations and work for the year ending May 31, 1889, together with the report of the annual May inspection.

The report made from observations during the year and the general sanitary inspection of the city during the past weeks. Meetings of the Board have been held according to law and informally when necessary. Several complaints have been made to the Board and each case investigated and the proper remedy suggested or ordered, and in each case complied with. The custom of this Board is, each year, early in the spring, to publish and issue the general spring "clean up" notice. Aided by ordinance of the city requiring the same, and the City Marshal, whose duty it is specially made, sees to the enforcement of the orders and ordinances. The order has been generally complied with.

The general health of the city has been and is now, good. But very few cases of infectious or contagious diseases have been reported during the year, and the Board have been gratified with the comparison of the year previous, when diphtheria raged here as an epidemic.

No infectious or contagious diseases amongst animals have been reported or observed.

Following out the general plan of inspection and report recommended in "Public Health," Vol. III., No. 2, of April, 1887, however necessary or desirable it may be to the citizens of our city, no change except a general cleaning and disinfection of privies has been ordered by the Board. Our present system, the "deep closet" or "hole in the ground" will always remain. No Board could be selected with the courage or backing to enforce a general change to any other system.

The railroad stock yards in the city are cleaned annually and partly refilled and disinfected several times a year.

All garbage, manure, refuse, animal or vegetable matter, is carried to the public dumping grounds, established by the city council, where, under proper regulations, it is buried or disposed of.

Water supply for public and private use is all taken from wells. An analysis of over fifty samples made of 1887-8 generally demonstrates as yet a good supply of pure water, especially that from deep wells. A system of water works is contemplated by the city and it is hoped that it will be a reality in the near future.

Under the provisions of the law passed by the Legislature last winter, Fred Keller, a competent person, has been appointed inspector of cattle, swine, calves, sheep, before slaughter.

On March 31, 1888, this Board recommended to the city council the drainage of two very extensive swamps or marshes, extending for several miles parallel with and adjacent to our principal streets. A very satisfactory beginning was made and much good accomplished at little expense. The ditches have since partly caved in and the free drainage of water is prevented. The work commenced should be thoroughly completed this year. The general sanitary condition of the city is good.

DELANO, (V.) WRIGHT CO., DR. T. J. CATLIN, H. O., MAY 4, 1889.—I have in accordance with the law made an inspection of the village. \* \* \* I find the alleys and yards in a cleaner condition than is usual at this season of the year, but some vacant lots have been used for dumping grounds and some contain stagnant water, which should be removed; several pig-pens and privies are to be found among the worst nuisances; the pond under the depot ought to be drained or filled; also the vacant lots on either side of Second street, between Railroad avenue and Bridge.

During the year past scarlet fever has prevailed to a limited extent and was quarantined as the cases seemed to demand; no deaths occurred from this cause.

GLENWOOD, (V.) POPE CO., DR. W. C. ALLEN, H. O., MAY, 20, 1889.—I have made the annual inspection of the village of Glenwood in May, 1889, and find some things that might be improved, but on the whole the village is in a good sanitary condition. During the past year we have had very little sickness. I am of the opinion that Glenwood is the most healthy village in the State.

GRANITE FALLS, (V.) YELLOW MEDICINE COUNTY, DR. F. J. CRESSY, H. O., MAY 10, 1889.—City in good sanitary condition. A few large manure heaps in each ward to be removed. Most of the privies being old style should be disinfected and cleansed by placing in the vault of each not less than one half bushel of fresh lime. A limit within which no swine may be kept should be established.



P. S.—At a regular meeting of our Local Board the within report was accepted and an order made requiring all old-style privies to be cleansed as per report, and all manure and garbage removed within ten days of publication of notice. A committee was appointed to confer with the City Council relative to establishing a limit to the keeping of swine.

BARTLETT, (Tp.) TODD Co., ERNEST ERICKSON, C. B. S., MAY 5, 1889.—We, the Local Board of Health, after duly posting notices, to the effect that "all sources of filth or causes of sickness would be buried or attended to at the expense of the occupants of the land in said town, after May 1, 1889." Have made an inspection and caused all such sources of filth and cause of sickness to be destroyed.

SHERBURN, (V.) MARTIN Co., DR. G. R. HARNDEN, H. O., MAY 31, 1889.—The inspection of this village has been made, and we find it in a fair condition; most all manure has been hauled away. The privies are generally in good condition; three are yet to be cleaned or moved. Most of them have holes in the ground but are kept in order by lime and wood ashes. Most are cleaned or moved once or twice a year.

ROCKFORD, (V.) WRIGHT Co. DR. O. R. FASSETT, H. O., MAY 13, 1889.—The Board of Health of Rockford, Minn., posted up on May 1, 1889, sanitary notices, requiring the citizens of the village to comply with the State law for the preservation of public health within ten days of the publication of said notices.

In company with another member of the Board I made a thorough sanitary inspection of the village on the 11th inst, and found a marked improvement on past annual inspection. Each year the citizens of this village see more and more the importance of cleanliness on their several premises, and in observing the State sanitary law for the preservation of health. In our survey, we were highly gratified to find all so universally having complied with the orders of the Board; and to the observance of sanitary precautions we ascribe the remarkable health of our village.

### LABORATORY NOTES.

A SCHEME FOR SANITARY EXAMINATION OF WATER ADAPTED TO THE USE OF HEALTH OFFICERS IN MINNESOTA.—The object of work here proposed is to ascertain whether a given water is fit for human food. It is a question of healthfulness, and the answer depends upon the results of several investigations. The common mistake that the chemical analysis alone is sufficient will appear as we get on in the discussion of the subject.

I. HISTORY—The first thing to be done is to learn the history of the water itself.

(a) *Its source*—(spring, surface or deep well, stream, pond, lake or rain.) The method of its storage and distribution for use. If a well, is it deep or surface? Artesian or drive? Are its walls of wood or stone? Loose or cemented? If pipes are used for distribution, are they iron alone or galvanized or otherwise protected from rust? Are they lead or wood? If water is stored what is the character and condition of reservoir or cistern? What are the surroundings of source of water? If a well, where does it come from, what are strata of soil, rock, and from which does the water come? Has it more than one source, and what are they? Particularly, does surface or storm water get access to it? Is there any source of impurity, natural or artificial, which, constantly or occasionally, may get access to the well? This includes not only what can be carried by water, but living or dead animal matter, which may get in at the surface or elsewhere. What is the health of those who drink the water? If any bad effect is suspected, what and why? Any other facts which serve to define its influence upon health which common experience affords.

### II. PHYSICAL EXAMINATION OF SAMPLES.

(a) *Color*—Best tested by use of a tall, clean, glass cylinder, giving a column of say, eighteen or twenty inches. Clear and clean thin glass bottles of

two quarts capacity, are easily obtained and serve very well. If they are used for collecting, nearly all the facts under this section can be fairly well observed after the filled bottles come to hand. Our spring, spring lake, and deep well, waters will usually be found colorless, if examined as soon as any suspended matter may have settled. Shallow well waters are frequently colored, and are to be suspected. So are the waters of our rivers and many smaller lakes, though the color here is, oftener than otherwise, due to dissolved vegetable organic matter, which is, except in great amounts, harmless, to debris of leaves and dead or cast off remains of animals, dead microscopic matter, and possibly, to living cells, animal or vegetable, whose natural habitat is the bottom. Many forms of vegetable and animal life will be found near the surface. The *sediment* under the microscope and by the aid of a few chemical agents, can be made to answer many important questions which we shall discuss later on.

(b) *Taste*—Sanitarily pure water has no positive taste. Any sample which has a decided taste is to be suspected and if offensive, condemned. In pond and lake water, as also in artificial reservoirs, especially those open to light and air, it is usual to find more or less animal and vegetable life, and the debris of such life, and they often occasion offensive and peculiar taste.

Always remember that a dangerous amount of animal or vegetable matter may be in solution in a water, and if fresh from its source, the water may have no taste which would suggest its presence. Dissolved mineral matter (in Minnesota, usually and chiefly, as lime and magnesia bicarbonates,) give no other than a lively freshness, if cool, which suggests the carbonic acid in solution as the probable cause. Salt must be in considerable amount to be recognized, but in small amounts it diminishes that sense of satisfaction or satiety which pure, cool, spring water always affords, so the fact that a water does not quench thirst is a reasonable ground for suspecting salt. Drink cool boiled water in comparison and taste the difference, due largely to the dissolved gases and salts. The peculiar taste of markedly hard, iron, or alkaline water is well known.

(c) *Smell*—Any odor in drinking water, whether freshly drawn or after standing in a closed vessel in warm place is enough to justify suspicion. To test any given sample, smell the water when the bottle is first opened and note absence of or kind of odor. Put half a pint in a clear pint bottle, shake it well and smell again, then cork the bottle and leave in warm place for a few hours, test again; then put the same bottle again corked, in water of about 100°F., test again; cork the bottle and boil the sample by setting it into vessel of boiling water. Note the effect of thorough boiling on the odor, color and sediment. Finally, add a little caustic soda or potash and boil again, making same observations as before. Test the odor upon and after boiling.

Conclusions from physical examination:

If odorless, free from positive or offensive taste, colorless, and free from sediment, and no suspicion awakened at any step of the examination, the sample may usually be passed as a sanitarily pure water. Any deviation, if not satisfactorily explained, will justify doubt and demand further investigation. It must never be forgotten that a water may pass this physical examination fairly and yet have a history which may justify suspicion, for we now know that the causes of some diseases may be in suspension or solution and escape discovery by this method of study.

### III. CHEMICAL EXAMINATION OF DISSOLVED OR SUSPENDED MATTER.

The examination may be qualitative or quantitative. A few years ago this distinction was very clearly marked and a serious bar to investigation. To-day, thanks to methods of volumetric analysis, it is often as easy to make the one as the other. I have therefore drawn largely from volumetric methods here.

The *reaction* of water, that is, its acid, alkaline or neutral condition, often-times throws light upon our question, and it is desirable to select one or more of the great number of the colors which supplement or replace our old friend litmus. Carbonic acid, which is often abundant in our well water, interferes with the blue reaction of litmus, which has other disadvantages, among them the difficulty of its use at night. Tincture of cochineal is better, not much affected by carbonic acid, but it is well to remember that it is affected by iron, which, however, is rarely present in serious amount in drinking water. The tincture of cochineal is made by bruising commercial cochineal and digesting it with water, in proportion of half a drachm to the ounce, add alcohol in proportion of two drachms to the ounce, filter it, and the filtrate is ready for use. Its natural color is yellowish red; mineral acids make it bright yellow or brown yellow. All natural waters are more or less alkaline and to test the alkalinity we need a standard solution of sulphuric acid.

I suppose it true that a moderate alkalinity (equivalent to 10 or 15 grains of carbonate of lime to the gallon) is the normal condition of water, so that if you find a marked variation from that in Minnesota waters, it will be just reason for further examination. Wanklyn proposes the best method for testing alkalinity for our purpose and, changing the formula into terms of grains per American gallon, it is as follows.

The chemicals needed are the cochineal solution, described above, and a standard solution of sulphuric acid for which the following formula has been devised and tried in the laboratory, and, so far, works accurately. Take sulphuric acid U. S. P. sixteen grains by weight. Mix it with eight fluid ounces of distilled water and one half a drachm (thirty minims) of this solution is equivalent to 0.1275 grains of carbonate of lime. To make the test proceed as follows: Take two fluid ounces of the water to be tested in a smooth, thin and clear glass, of the capacity of three or four ounces, add 20 drops of the cochineal solution, and, if the water is alkaline, it instantly becomes of a beautiful red or violet red color. To this mixture must now be added, very carefully and drop by drop, some of the sulphuric acid from a measured quantity, so that when the experiment is ended, you can know just how much acid you have used. A 2 drachms graduate marked off into minims will serve, but I advise a pipette of half ounce capacity and graduated into minims, as better. In this way add the sulphuric acid drop by drop till the color of the water changes to a yellow; the change is perfectly distinct and characteristic, and if the tumbler stands on a clean white plate in a good light, any one with ordinary care will detect the change of color instantly, and not add another drop of the acid after it occurs, for it is the evidence that the alkalinity has been exactly neutralized. For illustration, let us assume that the two ounces of water required 75 minims of the acid to change its color, that is 2.5 of our measures (half drachms) each of which is equivalent to 0.1275 grains



of carbonate of lime; we multiply the number of measures of acid taken by this decimal; 0.1275 by 2.5 equals 0.31875 grains of carbonate of lime in two fluid ounces of water, which multiplied by 64 gives the amount of carbonate of lime in each gallon of the sample. The so-called "alkaline waters" and some of the artesian well waters of our State are unusually alkaline because of the soda and, possibly, potash which they contain. The history of a sample will suggest a lookout for this, but it will be well whenever the alkalinity of a water is in excess of 25 grains per gallon to examine it for the alkalies. This you can easily do by boiling a pint of the suspected sample, briskly, for half an hour, make up to original quantity with distilled water, take two ounces of the clear water and test for alkalinity again. Any found would be due to soda. Iron interferes with the color of the cochineal reaction by darkening it, but, in the amount usually present, does not affect the alkaline reaction here referred to so far as I now know. But the depth of color induced by the iron is a qualitative test of its presence worth note. Will report further when experiments, now making, are complete, and use cochineal for other metals.

*Hardness.*—This quality, which, till it is neutralized, prevents the forming of a permanent lather with soap, is due, in our Minnesota waters, to the salts of lime and magnesia. A solution of soap will remove it, so that such a solution of known strength, is used for the purpose. Take of the white soap U. S. P., one drachm by weight, of the dilute alcohol U. S. P., 18.75 fluid ounces. When the soap is dissolved you have a solution of soap of which half a drachm (30 minims) equals .02 grains of carbonate of lime, or its equivalent. To make the test, take a clean, clear glass bottle of half a pint capacity, put in two ounces of the water to be tested, add 15 minims of the soap solution from a minim pipette or measure, cork the bottle, shake thoroughly, then lay the bottle on its side. If a lather covering the surface of the water is formed, watch its duration and if it breaks before five minutes have passed, add more soap solution and repeat the test. When you get a good lather covering the whole surface of the water and lasting five minutes, the test is ended. See how much soap solution you have used and get its value in terms of carbonate of lime. Suppose, for example, that you used 6 half drachms, or, measures, you subtract half a measure as the amount necessary to make a lather with two ounces of distilled water, and there remains 5.5 measures used in removing the hardness, therefore 5.5 by .02 equals 0.11 grains of carbonate of lime, or its equivalent in two ounces of the water, and 0.11 by 64 equals 7.04 grains of carbonate of lime to the gallon. This is the hardness from all causes and is stated in terms of carbonate of lime by common consent and for comparison. Boil half a pint briskly for half an hour make up loss by evaporation and test two ounces of the clear water for hardness as before. The boiling drove off the excess of carbonic acid so that most of the lime goes down as insoluble carbonate. The hardness now is the permanent or irremovable, and the difference between the result of the first experiment and this one gives what is called the temporary hardness. The sanitary value of the test will be stated later.

If you find the hardness of any sample to exceed 10 of our measures of soap solution it is best to repeat the test with an ounce of the water on trial diluted by an ounce of distilled water, and multiply the result by two.

(TO BE CONTINUED.)



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, June 10, 1889.

Quarterly Supplement to Report on Vital Statistics, }  
First Quarter, 1889.

(NOTE.—In the following table of death causes.

**Puerperal Diseases** includes *Puerperal Fever*, and *puerperal septicæmia*.

**Diarrhœal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of over five years of age.

**Diarrhœal Diseases of Children** includes intestinal diseases, under 5 years during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tuberculosis Mesenterica*, *Hydrocephalus*, and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we have been unable to classify.

**Not Classified** includes deaths from certain specified causes, not included in the report following.

See page 40 for comments concerning mortality from certain diseases.

**MONTHLY STATEMENT OF BIRTHS—FIRST QUARTER OF 1889.**

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT QUARTER FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO JUNE 10, 1889).

		GRAND TOTAL, 6492.	PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
SEX.	Males .....	51.89	6492	3368			
	Females.....	47.73			3099		
	Unknown .....	.38					25
COLOR.	White.....	99.97	6490	3368	3097		25
	Colored.....	.03	2		2		
	Unknown .....						
CONDI- TION.	Legitimate.....	99.62	6467	3352	3090		25
	Illegitimate.....	.38	25	16	9		
	Unknown .....						
NO. AT BIRTH.	Single .....	97.97	6360	3359	3048		23
	Twins .....	2.03	132	79	51		2
	Triplets .....						
PARENT NATIVITY.	Unknown .....						
	Both American.....	26.39	1713	887	820		6
	Both Foreign.....	56.07	3640	1888	1740		12
	Am'n Father—Foreign Mother....	5.50	357	186	168		3
	Foreign Father—Am'n Mother....	10.12	657	339	315		3
	Unknown .....	1.92	125	68	56		1

SUMMARY OF RETURNS OF DEATHS, FOR THAT QUARTER, FILED IN THE OFFICE

	Total Number of Deaths from all Causes for the Quarter 3464.																			Total of each Disease.
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	
Small Pox .....																				0
Measles .....																				89
Scarlatina.....																				85
Diphtheria.....																				208
Croup .....																				72
Whooping Cough..																				31
Typhoid Fever....																				91
Erysipelas.....																				33
Puerperal Fever...																				50
Diarrhoeal Disease																				8
Diarrhoeal Dis. of Children .....																				51
Insanity.....																				28
Convulsions.....																				144
Other Diseases of Nervous System.																				183
Cancer .....																				62
Phthisis .....																				297
Other Tubercular Diseases.....																				41
Diseases of Heart.																				121
Bronchitis.....																				148
Pneumonia and Pleurisy.....																				359
Diseases of Urin- ary Organs .....																				40
Still Birth.....																				179
Premature Birth..																				45
Old Age.....																				306
Violent Deaths....																				114
Not Classified....																				353
Ill-defined and Unknown .....																				331
Total Males.....																				
Total Females....																				
Grand Total .....																				

OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO JUNE 10TH, 1889).

Per cent. of deaths during the month.	SEX.		SOCIAL STATE.				AGE.											NATIVITY.				PARENT NATIVITY.															
	Males.	Females.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.	Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.	Both Foreign.	American Father.	Foreign Mother.	Foreign Father.	American Mother.	Unknown.	*Localities Invaded	*Counties.	
.00	38	51	37	1	1	1	9	9	1	2	1	6	2	3	4	1	1	1	1	1	1	1	20	15	1	2	7	26	2	2	2	2	2	2	2	2	2
2.56	42	43	42	2	1	1	19	10	3	1	2	4	4	7	2	2	2	2	2	2	2	2	25	22	1	3	10	31	3	5	1	1	1	1	1	1	1
2.45	97	111	97	9	1	1	10	11	13	13	11	27	8	4	4	4	4	4	4	4	4	4	46	27	20	4	26	55	3	3	11	2	2	2	2	2	2
6.	42	30	42	...	...	...	3	10	9	15	11	34	14	1	5	6	4	...	...	...	...	...	43	38	23	6	32	58	3	3	13	5	31	21	...	...	...
2.07	16	15	16	...	...	...	9	7	6	2	1	5	2	1	...	...	...	...	...	...	...	...	19	12	8	3	13	26	1	1	4	2	1	1	1	1	1
.89	50	41	37	11	1	1	11	2	...	...	...	4	3	2	7	20	9	1	3	...	...	...	11	4	...	1	2	11	8	3	2	1	1	1	1	1	1
2.59	10	23	15	8	...	...	10	1	...	...	...	1	2	4	8	20	7	6	2	3	...	...	1	8	4	7	29	3	35	1	2	9	7	20	18	...	
.98	50	2	48	...	...	...	1	2	...	...	...	1	...	...	...	1	2	1	2	1	...	...	3	1	3	2	1	3	2	...	1	1	4	3	9	8	...
1.73	7	1	5	2	...	...	1	...	...	...	...	1	...	...	...	1	1	2	...	...	...	1	2	...	5	...	7	...	...	...	...	...	...	...	...	...	
.23	34	17	34	...	...	...	31	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	24	6	4	...	10	19	1	1	2	2	2	2	2	2	
1.47	19	9	8	9	2	...	12	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	2	3	...	6	8	1	1	1	1	1	1	1	1	
.8	95	94	1	...	...	...	82	5	...	...	...	1	...	...	...	2	1	...	...	...	...	...	66	20	5	3	1	18	56	3	14	...	...	...	...	...	...
4.15	49	47	1	...	...	...	29	8	...	...	...	1	2	1	1	2	...	...	...	...	...	...	29	8	8	...	15	30	...	2	2	33	25	...	...	...	
5.25	109	74	55	14	1	21	6	4	2	1	2	6	3	4	9	7	6	8	10	...	...	2	34	22	16	33	4	26	66	1	7	9	...	...	...		
1.79	22	40	5	17	...	...	...	...	...	...	...	...	...	...	1	3	4	6	3	2	...	...	...	32	8	18	15	1	21	42	4	1	6	35	23	...	...
8.57	129	68	54	10	2	3	3	4	...	...	...	1	2	3	5	13	42	26	14	14	7	...	2	17	15	19	77	12	93	1	2	21	...	...	...		
1.18	23	18	23	...	...	...	3	4	5	1	1	2	1	2	...	...	...	...	...	...	...	...	1	18	25	39	84	2	25	111	4	3	25	64	43	...	
3.41	66	28	32	6	...	...	7	4	...	...	...	3	...	...	...	2	1	2	...	...	...	...	12	1	3	2	...	9	8	...	1	...	...	...	...	...	
4.13	75	55	15	32	8	4	1	1	1	1	1	1	2	1	8	11	9	4	12	...	...	2	11	5	14	36	...	14	43	...	...	...	...	...	...		
10.36	207	152	99	47	5	41	21	13	4	3	5	5	5	5	2	11	11	9	19	...	...	...	48	11	13	3	...	21	46	3	3	2	...	...	...		
1.15	23	17	5	11	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	43	6	12	6	...	16	42	3	4	3	...	...	...		
5.17	121	121	121	...	...	...	121	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	121	...	...	...	...	25	78	2	6	10	...	...	...		
1.3	23	58	58	...	...	...	58	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	58	...	...	...	...	14	37	3	2	27	22	...	...	...	
8.83	171	6	95	67	8	...	22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20	...	3	...	...	10	6	1	2	4	...	...	...		
3.29	84	30	22	7	1	...	22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	21	...	...	...	...	6	6	...	1	6	3	5	5	...	
10.19	185	115	61	7	2	53	15	3	2	3	5	8	6	16	13	13	22	22	22	...	...	...	...	61	104	3	31	94	2	...	...	...	...	...	...	...	
9.55	197	176	16	5	...	...	142	13	3	2	4	3	6	23	19	17	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
	1885	1329	424	117	15	562	126	51	49	41	91	53	60	143	114	88	134	100	104	126	58	19	747	264	316	530	28	388	1118	...	38	106	235	...	...	...	
	1579	957	450	158	14	436	104	56	47	31	90	43	69	161	134	81	82	96	77	61	11	544	250	318	442	25	354	908	...	41	82	194	...	...	...		
	1885	1579	2236	874	275	29	1088	207	130	96	72	96	139	304	248	169	182	200	203	119	30	1291	514	634	972	53	742	2026	...	79	188	429	...	...	...		

\*Average for the quarter.

## MINNESOTA.

MORTALITY IN THE FIRST QUARTER OF 1888 AND 1889, BY MONTHS, QUARTERS AND YEARS

	Year	Deaths by months									Deaths by Quarters.		
		Jan.			Feb.			March.			Total	Localities Invaded	Counties
		Total	Localities Invaded	Counties	Total	Localities Invaded	Counties	Total	Localities Invaded	Counties			
Total from all Causes .....	{ 1888 1217 1889 1137				1220 1128			1378 1199			3815 3464		
Measles .....	{ 1888 5 5 4 9 6 5 15 9 7 29 7 5 1889 28 24 20 26 22 17 35 27 19 89 24 19												
Scarlatina .....	{ 1888 11 7 7 14 9 7 18 8 8 43 8 7 1889 27 20 16 32 20 16 26 20 16 85 20 16												
Croup .....	{ 1888 21 18 15 27 18 12 24 16 13 72 17 13 1889 26 20 15 27 19 18 19 15 14 72 18 16												
Diphtheria .....	{ 1888 117 56 36 73 37 25 55 28 21 245 40 27 1889 78 40 25 63 29 20 67 25 19 208 31 21												
Typhoid Fever .....	{ 1888 57 26 21 35 19 17 36 18 17 128 21 18 1889 32 20 19 27 20 19 32 20 17 91 20 15												
Diarrhoeal Diseases of Children	{ 1888 8 2 2 11 5 5 4 4 4 24 4 4 1889 21 7 6 14 12 12 16 7 7 51 9 8												
Phthisis .....	{ 1888 100 55 36 101 56 23 121 77 50 322 63 39 1889 95 56 46 100 70 42 102 66 42 297 64 43												
Bronchitis .....	{ 1888 47 31 27 33 17 15 56 29 25 136 26 22 1889 39 16 14 58 23 21 46 21 18 143 20 13												
Pneumonia and Pleurisy .....	{ 1888 97 46 30 102 59 35 117 55 34 316 54 33 1889 91 64 38 144 89 48 124 72 46 359 75 44												

Total for 1888 corrected to May 1, 1889. Total for 1889 is corrected up to June 10, 1889.

*Measles*—Comparing the returns of deaths by quarters, it had three times the distribution and mortality, compared with the first quarter of 1888. The mortality was greater, but the distribution less than scarlatina. Mortality in both years greatest in March.

*Scarlatina*—More than twice the distribution and twice the mortality compared with same quarter last year. Note the curious coincidence in the distribution by months for 1889.

*Croup*—Same mortality, and nearly same distribution for same quarter of 1888 and 1889.

*Diphtheria*—Decided diminution in distribution and mortality as compared with same quarter of last year.

*Typhoid Fever*—Diminished mortality but same distribution.

*Diarrhoeal Diseases of Children*—Rise in mortality and distribution; began earlier in 1889 than in 1888.

*Bronchitis*—An increase in mortality but a decrease in distribution.

*Pneumonia and Pleurisy*—Increase in distribution and mortality as compared with first quarter of 1888.



# PUBLIC HEALTH IN MINNESOTA.

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VOL. V. NO. 5.

JULY, 1889.

WHOLE NO. 53

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JUNE, 1889.

### DISEASES OF MEN.

Diphtheria.....	}	cases, 102
		deaths, 31
Scarlatina.....	}	cases, 39
		deaths, 7

### DISEASES OF ANIMALS.

Cases of glands remaining isolated or not accounted for.....	33
Reported during the month.....	6
Killed.....	5
Released.....	2
Isolated.....	4

Remaining July 1st, 1889, isolated or not accounted for..... 32

NOTE.—Most of these are cases exposed, and isolated for further observation.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF JUNE, 1889, AS REPORTED UP TO JULY 20.—(Population, estimated 1889, cities over 2,000 inhabitants, 539,000; towns and villages, 1,047,860.)

Total number of deaths 820, a decrease of 27 compared with last month—426 males, 394 females; 56.22 per cent occurred in cities of over 2,000 population. Ages, under 1 year, 33.65 per cent; 1 to 5 years, 12.8 per cent; 5 to 15 years, 8.9 per cent; 15 to 30 years, 14.5 per cent; 30 to 50 years, 11.48 per cent; 50 to 70 years, 9.51 per cent; over 70 years, 8.65 per cent. Of 276 deaths under 1 year old, 68.84 per cent were in cities; from 1 to 5 years, 59.04 per cent in cities.

*Measles*.—17 deaths (9 males, 8 females) in 12 localities, 12 counties, 47 per cent occurred in cities. Mortality and distribution same as last month. Ages under 1 year, 35 per cent; between 1 and 5 years, 35 per cent, 3 males and 2 females between 15 and 30 years.

*Scarlatina*.—26 deaths (10 males, 16 females) in 10 localities, 8 counties; 65 per cent occurred in cities. Ages, 73 per cent under 5 years. Decrease in mortality and distribution compared with last month.

*Diphtheria*.—43 deaths (27 males, 16 females), in 22 localities, 20 counties; 37 per cent occurred in cities, about one-half the mortality from this cause in cities, compared with last month. Ages, 39 per cent under 5 years; 37 per cent between 5 and 10 years; 24 per cent over 10 years. A decided decrease in mortality compared with last month but the distribution is slightly greater.

*Croup*.—6 deaths (2 males, 4 females), in 4 localities, 3 counties. Ages, 50 per cent under 5 years; 50 per cent between 5 and 15 years. Only one occurred in cities. A continued decrease in mortality and distribution.

*Typhoid Fever*.—17 deaths (12 males, 5 females), in 10 localities, 8 counties. 53 per cent occurred in cities. Ages, 47 per cent between 15 and 30 years; 29 per cent between 30 and 50 years. About the same as last month.

*Diarrhæal Diseases of Children*.—73 deaths (42 males, 31 females), in 13 localities, 12 counties; 87 per cent occurred in cities. Ages, 83 per cent under 1 year. As was expected a decided increase in mortality or distribution compared with previous months.

*Bronchitis*.—10 deaths (4 males, 6 females), in 7 localities, 7 counties; 60 per cent occurred in cities. Ages, 40 per cent under 1 year. A decided decrease in mortality, but distribution about the same as last month.

*Pneumonia*.—37 deaths (18 males, 19 females), in 20 localities, 19 counties; 62 per cent occurred in cities. Ages, 56 per cent under 5 years. A decided decrease in mortality and distribution compared with last month.

**SMALL POX IN CLAY COUNTY.**—On another page will be found details to August 1st of this outbreak. It is a puzzling question where the first case encountered the infection. Despite the circumstances, the disease seems now under control.

**SANITARY INSPECTION.**—Attention is called to the valuable reports printed under this head in this and preceding numbers. The reader can judge pretty well of the efficiency of any given Local Board of Health by the character of the report, which the Health Officer makes of their yearly work.

**LEPROSY.**—The heroic self sacrifice and death of Father Damien, one of the number of men and women of varying creeds who have devoted themselves to the care of lepers, has awakened new interest in the disease, and enabled a number of physicians whose acquaintance has been limited to a case or two, or a visit to a leper colony, to trot out their "experience" of the disease and their very positive opinions as to the danger of its becoming epidemic. Some are insisting that the disease be kept out by legislation which would exclude about all Norwegian immigrants, as it is latent for years often in its victims, The Minnesota experience is worth considering in that connection.

The disease has been imported into the northwest continuously since the beginning of the Norwegian immigration, many years ago. No restrictions have been put on such importation because it has not been frequent. The State Board of Health of Minnesota began its study in 1873, the chairman of its committee was Dr. Ch. Gronvold, himself a graduate of the University of Christiania, and familiar with the disease. He has kept an accurate list of all lepers and of their history to date. His reports will be found in the publications of this Board. He sums up the whole matter in a note to the Secretary in December, 1888, as follows:

*"Our experience in the northwest has made it probable that the disease to date is not hereditary; not a single case has yet been discovered, after forty years of immigration, where a child, born in these States of leprous parents, has inherited the disease, nor for that matter got it in any other way."*

The experience of the western States in this matter brought Dr. G. Armaner Hansen, chief of the leper service of Norway, and the discoverer of the bacillus leprae, to make a personal investigation for himself for the purpose of answering the question, Is leprosy contagious or does it spread in any other way into western United States? He wrote to the Secretary of this Board for assistance "to discover the dwelling places of the immigrated leprous, and, if possible, also of Norwegian immigrants who descend from lepers in Norway." He knew of fifty-two lepers who had immigrated, and that hundreds or thousands of immigrants had leprous parents or other kindred in Norway. Every facility was afforded him. He made a thorough and painstaking investigation. In July, 1888, he wrote to Dr. Hewitt as follows: "My intention in coming to America was to see if I could find a decided and indisputable proof of the heredity of leprosy. \* \* \* I have not found a single case of leprosy originated in this country. \* \* \* The number of immigrated lepers is greater than I had any idea of. Most of the lepers I have seen claim that they had no symptoms of the disease when they left Norway. I have no doubt that the patients were lepers when they immigrated because of the very slow development of the disease." Why does not leprosy spread here? he finds difficult to answer, and writes: "But if my opinions as to this point are right, I think that the cause is to be looked for in the greater cleanliness, and the better dwellings of my countrymen here than in their old homes. This being the case, I think there ought not to be any fear of the spread of leprosy in this country."

He makes a statement of peculiar importance as respects the danger of the attendants on the lepers catching the disease.

*"If people wash themselves, and take the least care of themselves when they come in contact with lepers, I do not think there is any danger whatsoever. It is a remarkable fact that not one of the nurses or servants in our asylums has caught the disease, although they daily wash and dress the patients."*

Dr. Hansen's letter and reports will be found in the numbers of this journal for February and June, 1888, and Dr. Gronvold's report earlier. Both have been printed separately and will be sent to any one wishing and applying for them. It is proper to add that the prevalence and behavior of leprosy in Minnesota is constantly under observation and that any appearance of danger will be promptly dealt with. We are thankful to believe that the probability is very remote.

A leading article in *The Lancet*, of June 29, 1889, is so nearly in accord with Dr. Hansen's personal experience, and so judicial a summary of the best professional opinion on the subject, that we wish it might be read by every one interested in the subject.

**QUARANTINE.**—The Royal College of Physicians of England, asked by the colonial office as to the periods of detention for quarantine in *yellow fever*, *cholera* and *small pox*, replied: "The incubation period of yellow fever and cholera is uncertain, and the committee is of opinion that it is unwise to impose quarantine restrictions in the case of these diseases. The committee is further strongly opposed to such restrictions generally, which it considers

harmful and vexatious. That in the case of small pox the incubation period of the disease does not exceed a fortnight, and that suitable precautions, based on this knowledge are desirable."

**RABIES**—Pasteur's statistics for the year ending May, 1889, are. 1,673 persons bitten and suspected to be affected with rabies, were inoculated; 1,487 French; 186 foreigners; 10 bitten in face and hands died during treatment and 3 afterwards. There was therefore 1 death in 128 persons treated or under treatment.

**SMALL POX IN TAMSEN TOWNSHIP, CLAY COUNTY.**—July 11th Dr. Patterson, H. O. of Barnesville, telegraphed the Secretary of the State Board: "I have three cases of confluent small pox. Come immediately." Telegram was received at 9:30 a. m., too late for the Secretary to arrive the same day, so he telegraphed Drs. Du Bois and McMasters of Sank Centre, asking one of them to go on afternoon train, investigate and report. Each had experience of the disease with the Secretary in the Stearns county outbreak of 1881-82. Dr. Du Bois went, and same night telegraphed: "Four cases and more exposures. Cases quarantined." Secretary telegraphed Dr. Patterson on the 12th: "Coming on night train; have Chairmen of infected or suspected townships meet me at most convenient place at noon to-morrow (13th). Send messengers and notify Tamsen Chairman to isolate all infected or suspected cases." He immediately replied: "Will follow instructions." Secretary reached Barnesville at 3 a. m., the 13th inst. with fifty points animal virus and two crusts of humanized virus. Saw Dr. Patterson immediately and arranged to go out to Tamsen in the morning. Arrived at infected house, about 10 a. m., and found the first case to have been varioloid, now convalescent and caring for the other sick—three little children, three, five and twelve years of age, all having semi-confluent small pox. One little child of about three years, was not yet sick, and father, and mother, with two hired men, having old vaccination marks, were still well. Immediately prepared some humanized virus, and carefully vaccinated the little child, father, mother, and hired men, and obtained the following history of the outbreak:

May 11th, 1889, Ole and his sister, young immigrants, left Christiania, Norway; came on Cunard steamship Gallia, arriving in New York harbor May 26th. They were not vaccinated on the ship but received certificates of vaccination. They heard of no small pox on the ship. They arrived at Barnesville on the night of June 3, and on the 4th were taken by Tamsen to his house. July 16th the girl (21 years old) had back ache, fever, etc.; on the 18th a rash appeared and on the 21st it was pustular. Tamsen took her into Barnesville (about eight miles), and consulted Dr. Patterson. He had never seen small pox; chicken pox was prevalent. It was so called, but to avoid possible danger he advised that she be isolated in the roomy granary of Tamsen till the truth should be known. Mr. Tamsen, who is an intelligent man, was very anxious and suspicious, "wishing to notify the Secretary if it was small pox." They went home and she was isolated as directed. On the 29th-30th of June, the three children of Tamsen above referred to, took sick, and on the 2d of July the rash appeared on all of them. July 4th, Tamsen, without change of clothes, went to see the Doctor, but he was away. On the 8th he went again, but he was away. On the 10th of July Tamsen went for the Doctor to come out; he did so, discovered the disease, isolated the whole family, and that night telegraphed the Secretary. During the whole time from June 17th to July 10th, there had been frequent exposures of other people. July 6th there was a meeting at Tamsen's place, and some women went in to see the children, against Tamsen's advice. He went to church on the 7th, but after that, satisfied of the danger, refused to admit people to the house, or to associate with any one.

There had been, as the above history shows, extensive exposure. Mr. Tamsen, at the suggestion of the Secretary, prepared a list of all who had been at his house since June 17th.



Dr. Patterson and the Secretary then went to find the Local Board of Health, and found them a few miles off arranging for a new road with the Board of an adjoining town. Both Boards readily agreed to the suggestions made by the Secretary, and the Tamsen Board contracted with Dr. Patterson to begin on the 14th a systematic house to house visitation with the chairman, and, using Tamsen's list, to isolate all who had been exposed, and to vaccinate the entire population of the township. The Secretary furnished in all 150 points of animal virus, and two crusts of humanized virus. July 14th all exposed persons had been isolated, and some ninety-four persons vaccinated. The work was vigorously prosecuted, till all had submitted to the operation.

Returning on the 13th to Barnesville, the Secretary met the Local Board of Health and the Mayor, and arranged measures for guarding against the exposures there. July 20th the Chairman of Tamsen, Ole C. Lund, reported 283 vaccinated to date. July 23d Tamsen himself had varioloid, but mild, and Dr. Patterson reported "the whole town vaccinated, and unsuccessful cases are repeating the operation with virus from successful cases." July 27th Chairman Lund reported: "One more case in house of C. Nelson, and quarantined the premises at 7 a. m. to-day." August 1st no new cases reported.

The Local Board of Health deserve special mention for the vigorous and intelligent co-operation and their hearty support and assistance to the Health Officer, Dr. Patterson, who has pushed the necessary measures with tact and zeal. We trust that no more cases will occur. So far as reported all sick are well or convalescing.

### DIPHTHERIA IN MINNESOTA.

A STUDY FOUNDED ON THE VITAL STATISTICS AND INFECTIOUS DISEASE REPORTS FOR THE YEARS 1887-1888, INCLUDING THE RETURNS OF 1642 DEATHS FROM THAT CAUSE, FILED IN THE OFFICE OF THE SECRETARY OF STATE BOARD OF HEALTH AND CAREFULLY REVISED BY HIM.

#### DEATHS FROM DIPHTHERIA BY YEARS.

YEAR	TOTAL	PERCENTAGE OF DEATHS FROM ALL CAUSES.
1887	788	5.90
1888	854	5.85
Total for 2 Years,	1642	5.87

#### MORTALITY BY MONTHS—(DIPHTHERIA).

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1887.....	59.	48.	28.	30.	35.	62.	34.	63.	83.	100.	110.	136.
1888.....	117.	73.	55.	64.	47.	44.	52.	59.	69.	100.	88.	86.
Average for 2 years..	88.	60.5	41.5	47.	41.	53.	43.	61.	76.	100.	99.	111.

#### MORTALITY BY SEASONS—AVERAGE 2 YEARS—(DIPHTHERIA).

		BY QUARTERS			
		1st.	2d	3d	4th
Spring.....	129. or 15.73 per cent.				
Summer....	157. " 19.14 "	1887	135.	127.	180.
Fall.....	275. " 33.54 "	1888	245.	155.	180.
Winter.....	259. " 31.60 "				
		Average of 2 Years..	190.	141.	180.
					310.

#### SEX AND NATIVITY OF THE DEAD—(DIPHTHERIA).

	Male	Female	Unk'n	Minnesota	Other U. S.	Foreign	Unk'n
1887....	381.	405.	2.	591.	87.	71.	39.
1888....	422.	431.	1.	647.	128.	65.	14.

## PARENT NATIVITY—(DIPHTHERIA).

	Both American	Both Foreign	American Father, Foreign Mother	Foreign Father, American Mother
1887...	155.	489.	16.	74.
1888...	173.	539.	46.	58.

## AGES AT DEATH—(DIPHTHERIA).

	Under 1 Yr.	1-2	2-3	3-4	4-5	Under 5	5-10	10-15	15-20	20-30	Others
1887.....	44.	52.	63.	76.	71.	337.	282.	108.	25.	19.	48.
1888.....	36.	80.	96.	102.	84.	398.	296.	114.	28.	14.	4.
Average of 2 Years.....	40.	66.	79.5	89.	77.	367.5	289.	111.	26.5	16.5	26.

## MORTALITY (DIPHTHERIA) IN PERIODS OF 5 AND 10 YEARS.

In periods of 5 yrs., average of 2 yrs.					In periods of 10 yrs., average of 2 yrs.				
44.67 per cent	under 5 years				79.96 per cent	under 10 years			
35.27 "	between 5 and 10 years				16.75 "	between 10 and 20 years			
13.53 "	" 10 " 15 "				2.02 "	" 20 " 30 "			
3.23 "	" 15 " 20 "								

No year of life to 20 years escaped; but there were marked differences, least mortality at one year and gradual increase to 5. The mortality under 5 years is greater than any other 5 years of life. By periods of 10 years, the mortality is yet more striking.

## MORTALITY (DIPHTHERIA) BY YEARS IN PERIODS OF 5 AND 10 YEARS.

	1st 5 Years	2d 5 Years	3d 5 Years	4th 5 Years	1st 10 Years	2d 10 Years	3d 10 Years
1887.....	42.74	35.91	13.71	3.17	78.65	16.88	2.41
1888.....	46.60	34.67	13.34	3.28	81.27	16.62	1.64
Average of 2 Years...	44.60	35.29	13.53	3.23	79.94	16.75	2.02

## MORTALITY (DIPHTHERIA) BY SEX AND AGE—AVERAGE OF 2 YEARS—PER CENT TO TOTAL DEATHS FROM THIS CAUSE AND IN EACH PERIOD.

	Under 5 Yrs.	5-10 Yrs.	10-15 Yrs.	15-20 Yrs.	Under 10 Yrs.	10-20 Yrs.
Male. . .	51.5 per cent	54.01 per cent	50	50	49	50
Female..	48.5 "	45.90 "	50	50	51	50

## MORTALITY (DIPHTHERIA) BY SEXES AND YEARS.

1887.....	Males, 48.35; females, 51.39	
1888.....	" 49.41; " 50.47	
Average of 2 years.....	" 48.88; " 50.93	

Eighty per cent of all who die from diphtheria are under 10 years of age; 13 per cent between 10 and 15 years; 3.23 per cent between 15 and 20 years; and but 2 per cent after 20. Ninety-three per cent under 15 years, and 45 per cent under 5 years. Between 5 and 15 years of age for 2 years, there were 800 deaths, or 48.7 per cent of all deaths from diphtheria. By State census of 1885, there were 273,438 between 5 and 15 years; therefore average deaths from diphtheria for these ages were .146 per cent of the children of this age. It must be remembered that diphtheria is rarely fatal in persons over 15 years of age. The population under 21 years of age in 1885, was 384,026. Deaths from diphtheria, 1138, or .29 per cent of population under 21 years. One in every 333 persons died of diphtheria of the population under 21 year of age.

The malignancy of the disease appears from the following data:

## PLURAL DEATHS IN ONE FAMILY.

1887—2 deaths in each of 49 families.	1888—2 deaths in each of 58 families
" 3 " " 19 "	" 3 " " 21 "
" 4 " " 18 "	" 4 " " 7 "
" 5 " " 1 "	" 5 " " 5 "

These families were almost entirely in townships.

## PARENT NATIVITY IN THESE CASES.

	1887		1888
Both American .....	11 families,	24 cases	20 families
" Foreign .....	52 "	135 "	59 "
American father and foreign mother .....	2 "	2 "	7 "
Foreign father and American mother ....	8 "	20 "	3 "
Unknown .....	4 "	11 "	2 "

Of families having more than one case in 1888, there were: Germans, 25; Norwegians, 21; United States, 18; Swede, 15; balance scattering.

These plural deaths occurred in 61 localities, distributed over 38 counties, 54 townships, 4 villages and 3 cities.

The ages of plural deaths were:

Under 1 year.....	7	Between 1 and 5 years.....	65
Between 1 and 2 years.....	13	" 5 " 10 " .....	74
" 2 " 3 " .....	14	" 10 " 15 " .....	31
" 3 " 4 " .....	15	" 15 " 20 " .....	6
" 4 " 5 " .....	16	" 20 " 30 " .....	5

## DIPHTHERIA BY LOCALITIES INVADED.

The following table shows the place of invasion for each year and the number of deaths in each locality:

	Counties	T'wnships	Villages	Cities	NUMBER WHO DIED IN		
					T'wnships	Villages	Cities
1887.....	60.	170.	16.	17.	432.	51.	303.
1888.....	65.	184.	24.	17.	468.	71.	311.

By the census of 1885, the number of children between 5 and 15 years was, in townships, 178,036; in villages, 23,005; in cities, 72,397.

## PERCENTAGE OF DEATH FROM DIPHTHERIA TO THE POPULATION BETWEEN 5 AND 15 YEARS.

	Townships	Villages	Cities
1887.....	.118	.108	.204
1888.....	.128	.151	.209

The disease continued, or re-appeared, (after an outbreak in 1887,) in 1888: In counties, 35; townships, 29; villages, 11; cities, 8.

The disease invaded in 1887, but did not recur in 1888: In townships, 107; villages, 8; cities, 2.

The disease invaded in 1888, though not in 1887: Townships, 126; villages, 7; cities, 1.

**MORTALITY FROM DIPHTHERIA IN CITIES OVER 100,000 POPULATION, 1887-1888,  
BASED ON THE OFFICIAL RETURNS.**

**ST. PAUL.**

		Total	Male	Female	Under 5	Under 10	10-20	20-30	30-40
1887..	{ Number ...	73.	29.	44.	37.	53.	4.	4.	2.
	{ Percent'ge..	3.25	39.72	60.28	50.68	86.3	5.44	5.44	2.75
1888..	{ Number ...	94.	44.	49.	55.	80.	8.	2.	2.
	{ Percent'ge..	2.17	47.31	52.69	59.14	86.01	8.59	2.15	2.15

**MINNEAPOLIS.**

		Total	Male	Female	Under 5	Under 10	10-20	20-30	30-40
1887..	{ Number ....	138.	61.	77.	70.	117.	19.	1.	.....
	{ Percentage ..	7.02	44.20	55.0	34.06	84.78	13.77	0.72	.....
1888..	{ Number ....	123.	56.	67.	73.	109.	10.	2.	1.
	{ Percentage ..	4.23	45.52	54.48	37.4	88.62	8.13	1.63	0.81

FOR CITIES OF 5,000 AND OVER—DEATHS FROM ALL CAUSES IN 1887, 5,361;  
IN 1888, 6,797.

	Total	Male	Female	Under 5	Under 10	10-20	20-30	30-40
Percent, 1887.....	3.37	46.51	53.49	50.78	81.40	11.63	1.16	1.16
“ 1888.....	3.41	48.38	51.62	52.71	87.37	9.38	1.81	.....

FOR LOCALITIES OF LESS THAN 5,000 POPULATION—DEATHS FROM ALL CAUSES IN  
1887, 7,649; IN 1888, 8,128.

	Total	Male	Female	Under 5	Under 10	10-20	20-30	30-40
1887	{ Number .....	530.	261.	267.	206.	409.	103.	16.
	{ Per cent. ....	6.93	49.6	50.38	38.87	77.17	19.43	3.01
1888	{ Number. ....	577.	288.	288.	252.	452.	116.	9.
	{ Per cent. ....	7.09	49.91	49.91	43.67	78.33	20.10	1.57

RECORD OF DIPHTHERIA FOR 1887 AND 1888, COMPARED WITH YEARS  
OF 1872 TO 1886, INCLUSIVE.

Years. ....	1872	1873	1875	1876	1877	1878	1879	1881	1882	1883	1884	1885	1887	1888
Deaths ....	41	236	226	379	370	658	951	1397	1602	1374	1211	1138	788	854

C. N. H.

**SANITARY QUESTIONS AND ANSWERS.**

*The Health Officer must apply general instructions to specific cases.*—A Health Officer reported a case of diphtheria in a school teacher boarding at a hotel, and asked for *specific* instructions as to its management, to avoid misunderstanding. The Secretary replied: “The laws and circulars issued by this Board contains general instructions as to dealing with infectious diseases. These the Health Officer must apply to specific cases, to the best of his judgment, as he best knows the circumstances surrounding the case. \* \* \* \* The details of management are left to the local authorities, they being required only to report their action to me that we may bring this Board and adjacent Boards into thorough co-operation.”

*The best way to proceed to remove the “hole in the ground” privy.*—A Health Officer reports that he has determined to proceed against the “hole in the ground” to protect the water supply of the village, which is exclusively from wells, and will be for some time to come, and asks how to begin. The Secretary wrote: “Am glad to learn that you are about to move against the “hole in the ground.” Faribault, Northfield and other places have already



done so and are meeting with success. The best plan is to have your council pass an ordinance prohibiting further construction of the "hole in the ground" privy, and to substitute the dry earth closet, or something similar, although from personal use the earth closet, as per circular enclosed, I have found the best. As fast as the "holes" now existing become full, or when sickness prevails in a family using one, your Board can declare it a nuisance, source of filth, or cause of sickness, and order its removal, and the earth closet substituted. Be careful, set the example yourself, and get leading citizens to do so too."

*Suspected rabies. Can a Local Board of Health compel all dogs to be kept on their owner's premises?*—A Town Clerk asks the above question, to which the Secretary replied: "Because there is possible danger of Hydrophobia, till it is known that there is no such danger, or that it is past, owners of dogs are required to keep them at home, and off the public highways."

*How a nuisance may be dealt with.*—A Chairman asks advice as to dealing with a hog-pen containing about 100 hogs, and which has been complained of. Secretary replied: "The nuisance which you complain of can be dealt with by your Board under Sections 4, 5 and 6, chap. 132, laws of 1883, or under chap. 222, laws of 1885. I enclose copies of both laws. See 505 of the Penal Code refers to this matter. A "Public Nuisance" is defined by Sec. 319 of the Penal Code. There should be no trouble in dealing with this matter. If you have any doubt consult an attorney."

*Regulations for shipment of dead bodies.* The dead of small-pox, cholera, and yellow fever are forbidden shipment. The bodies of those dying of infectious diseases may be shipped after winding the body in a sheet saturated with a strong solution of chloride of zinc, and putting in an absolutely tight coffin. Coffins containing such bodies must be placed in a tight wooden boxes, and the space between the coffin and the box filled with sawdust saturated with a strong solution of chloride of zinc. All the above must be done under the direction of the Local Board of Health, to whom certificate of cause of death must be sent, and who will certify to the facts, and attach a copy of such certificate to the box. The authorities of the locality to which the body is going should be notified of its expected arrival and the cause of death. The box not to be opened after arrival."

### MAY SANITARY INSPECTION REPORTS.

ST. PETER (C.) NICOLLET CO., DR. G. W. MCINTYRE, H. O., JUNE 12, 1889.—In making my annual inspection of this city during May this year, I found it in much better condition, from a sanitary standpoint, than it was a year ago. Both streets and alleys are very well cleaned throughout nearly the whole city. The early spring and subsequent dry weather have been unusually favorable for clearing up.

A uniform grade has been established for the streets with a view to improve surface drainage. Now all new work on the streets is executed with that object in view. New walks also are being built on a uniform grade and in time will add greatly to the advantage and safety of the traveling public.

The low ground north of Minnesota square and also that near the German Lutheran Church was not drained last year. They are improvements very essential to the health of residents in those localities, and I would again call your attention to the necessity of the work.

Since my former report, the city has been furnished with a very elaborate system of water-works. The source of supply is a large well near the river. It is 20 feet in diameter, and about 40 feet in depth. The cunbing is of stone laid in cement, and the well is tightly covered. The water is thrown back into a large reservoir on College hill by means of pumps located at the well in buildings erected for the purpose. The reservoir or stand-pipe is 20 feet in diameter and 60 feet in height. It is built of iron plates, riveted together and is supported by a foundation of masonry. The top of the stand-pipe is over 200 feet higher than the water in the well. When the reservoir is full and the pumps at rest, there is a pressure on the pipes down in the city of about 90 pounds per square inch of surface. This pressure is sufficient to throw several streams of water over any building in the city without starting pumps, and the capacity of the reservoir is sufficient to run for several hours, or until the pumps can be put in motion.

Over three miles of pipe have already been laid, varying in size from 4 to 12 inches in diam-

eter according to the requirements of each locality. This, with the amount of hose purchased, gives the city ample protection against fire.

Some time during the past spring a sample of water from the city well was sent to Prof. Dodge, of the State University, for examination. He returned the statement that it contained an unusually large percentage of chlorine besides other impurities, and pronounced it unfit for domestic use. Several weeks later I sent samples to Dr. Hewitt, Secretary State Board of Health. His analysis corresponded very closely with that of Prof. Dodge, and he also said the water should not be used for domestic purposes unless the chlorine could be traced to some harmless source. At the Doctor's request, I have forwarded him samples from the city well again, and also from several other wells in that vicinity, in order to try and find the source of the chlorine, or the direction from which it comes. We have made a careful inspection of the lots in the vicinity of the well, and are led to believe that the source of the chlorine is an old packing-house more than a block from the well and no longer used, or else from a meat-market about the same distance from the well, or from both.

There are other sources of danger however, nearer and more serious than those. They are old "hole-in-the-ground" privies, and a stock-yard in which large numbers of cattle and hogs are frequently, if not constantly, kept. There is positive evidence that the water from under this yard goes, or may go, into the city well, because when the water is kept low in the city well, the well in the stock-yard goes dry. I consider the removal of this stock-yard with its stables, etc., absolutely necessary if we wish to obtain pure water, and would suggest that all the remaining portion of the block on which the well is located, be purchased by the city and *thoroughly cleaned up*. I would also suggest that all residents within one block of the well be required to provide "box privies," or "dry-earth closets." It is absolutely necessary that the water supplied by the city be suitable for domestic use as many of the old wells in the central part of the city supply water but a trifle better than sewage.

The various school buildings are in good condition and well cared for. They have all been supplied with water service from the city works. This alone should be a sufficient reason for using every possible precaution to supply pure water and to prevent any possibility of contamination.

The directors of Gustavus Adolphus College have made numerous improvements during the year and are contemplating others. They also have water service from the public supply.

In my last report I suggested the advisability of changing the method of ventilating the closets at the county jail and lock-up. The subject was also presented to the Grand Jury, but no improvements have been made. The present arrangement is a disgrace to the county, and I hope you will give the subject your serious consideration. Otherwise the jail is in good condition.

From May 31, 1888 to June 1, 1889, there have been 83 births in the city of which number 47 were boys and 36 girls. During the same period there were 50 deaths, exclusive of those in the hospital for insane. Of this number 24 were males and 26 were females. During the above year we have had 30 cases of scarlet fever, with only one death. Eighteen families were quarantined for the disease and it is probable that other families were affected by it, but in so mild a form that the true nature of the disease was unrecognized. We have had 15 cases of diphtheria during the year with four deaths. Eleven families were quarantined. Two horses were reported to me as having glanders, but a veterinary surgeon called to examine them thought otherwise.

Very few complaints of nuisances have been made during the year. The committee appointed by the Council a year ago to locate and purchase a lot for the burial of dead animals, has neglected to do so. Neither has any place been designated as a dumping-ground for manure and other rubbish, so it is still hauled across the river and left there, where it becomes a nuisance to those living near it, and a source of disgust to all passing that way. I think both subjects should command a more serious consideration.

WINONA (C.) WINONA CO., DR. FRANKLIN STAPLES, H. O., MAY, 1889.—The Board of Health of Winona consists of three members, is organized, and holds its meetings and performs its duties in accordance with the law of the State. The Board employs one Sanitary Inspector, who serves for the full year from the time of his appointment, and receives the same monthly salary as that of members of the police force. He is on duty every day in the year excepting Sundays, and reports daily to the health office. The duties of the Inspector are, to make inspections of premises concerning which complaints of unsanitary condition have been made, and, under direction of the Board of Health, to cause the cleansing of premises the removal of nuisances, etc.; to visit at stated times the slaughter-houses of the city and re-

port concerning their condition and surroundings, the methods of slaughter and of the disposal of all the material; to examine the city wells and other water supplies of the city; to see to the removal of all dead animals; to visit the dumping-grounds of the city and see that there are no violations of law regarding the removal of all dead animals; to visit the dumping-grounds of the city and see that there are no violations of law regarding the removal and disposal of the city's offal and garbage; in case of the existence of contagious or infectious diseases in the city, under direction of the Board, to quarantine premises, and give instructions concerning the sanitary condition and disinfection of premises, clothing, etc.; to carry out the orders of the Board concerning the quarantine and destruction of animals found to be affected with infectious disease, and to superintend or do such other work pertaining to the sanitary condition of the city that the Board of Health may require.

The present existence and prevalence for the past year of zymotic and infectious disease, has been remarkably small, as will be seen by reference to the summary of vital statistics for the year given below.

We think that no city in the country can show a record of the present and for the past equal to ours, of freedom from zymotic, infectious and contagious disease.

*Water Supply.*—The supply of water for domestic use is now from two sources, viz: from the city water works, and from wells, principally drive-wells, sunk in the coarse gravel beneath the soil of the city.

A careful examination of six samples of water furnished by us from different sources in the city has recently been made in the laboratory of the State Board of Health, and the memoranda of these analyses, with the remarks of the chemist, the Secretary of the State Board, are as follows: "Sample No. 1. Source, Mississippi River at Winona. Microscopic examination: Low forms of animal and vegetable life very abundant. Physical appearance, cloudy, grayish, greenish, some brown sediment.

Analysis: (Results expressed in parts per 100,000, multiplied by 0.584 gives grains per American gallon.) Solids, total, 15.0; Volatile, 5.0; nitrites, none; nitrates, very slight trace; chlorine, .238; oxygen used by organic matter, .4549; free ammonia, .0010; albuminoid ammonia, .0255; hardness, 9.4; alkalinity, 13.0. Residue: brown in numerous rings; burned with distinct inoffensive odor, and with black color, quite easily dissipated.

Remarks: Compared with analysis of the same made by Dr. Smart in December, 1886, the change, if any, is not for the worse. Note the marked difference between this water and that of the city public well, No. 2, of this series.

No. 2. Source, city well. Physical appearance: clear, bright, colorless, odorless, tasteless. Solids: total, 30; volatile, 8; nitrites, a trace; nitrates, none; chlorine, 1.9; oxygen used by organic matter, .2629; free ammonia, .0115; albuminoid ammonia, .0024; hardness, 18.0; alkalinity in terms of carbonate of lime, 22.0 pts.

Residue: Faint brown, burned with some odor, and with yellowish brown color in rings, very easily dissipated.

Remarks: Compared with Dr. Smart's analysis of December, 1886, chlorine is some less; "oxygen used" greater; ammonia, about the same. Compare with Nos. 1 and 4 on the question of common origin. The sample is better than at last analysis.

No. 3. Source, drive-well corner of Walnut and Second street. Second Ward. Physical appearance: clear, bright, colorless, tasteless, with no sediment. Solids: Total, 41.0; volatile, 13.0; nitrites, none; nitrates, marked trace; chlorine, 5.718; oxygen used, .0375; free ammonia, .0030; albuminoid ammonia, .0002; hardness, 23.0; alkalinity, 16.0.

Residue: White, burned with some odor and with little color, easily dissipated.

Remarks: Of the drive-well samples this is the worst. Amount of chlorine too large. It acts as if affected by some old impurity. I doubt the quality of the water.

No. 4. Source, from hydrant of city water works at a distance from the well (Second Ward). Physical appearance: Clear, bright, odorless, tasteless, no sediment. Solids: Total, 33.0; volatile, 8.0; nitrites, trace; nitrates, none; chlorine, 1.9; "oxygen used," .2533; free ammonia, .0040; albuminoid ammonia, .0030; hardness, 19.5; alkalinity, 20.0.

Residue, faintly yellow, burned with some inoffensive odor, and with considerable black color, very easily dissipated.

Remarks: Same as No. 3. Note.—It is here to be noticed that the analysis and conclusions of the chemist of the sample taken directly from the well of the city water works and of this sample taken from a hydrant at a distance are practically the same.

No. 5. Source: Drive-well, Fourth Ward, corner Carinona and Eighth streets. Physical appearance: Clear, bright, odorless, tasteless, no sediment. Solids: Total, 46.0; volatile, 18.0;



nitrites, none; nitrates, distinct trace; chlorine, 4.288; "oxygen used," .0469; free ammonia, .0020; albuminoid ammonia, .0044; hardness, 20.0; alkalinity, 11.0.

Residue: White, burned with some inoffensive odor and with little or no color.

Remarks: See No. 3. Same suggestion of old impurity.

No. 6. Drive-well, corner Garfield and Eighth streets. Physical appearance: Clear, bright, odorless, tasteless, a trace of sediment. Solids: Total, 20.0; volatile, 4.0; nitrites, trace; nitrates, none; chlorine, .953; "oxygen used," .0375; free ammonia, .0008; albuminoid ammonia, none; hardness, 11.4; alkalinity, 13.0.

Residue, faintly brown in few rings, burned with faint brown very limited color, very easily dissipated.

Remarks: A very fine water, and probably near the standard of your best drive-well waters, much the best of the series."

In a supplementary note Dr. Hewitt remarks: "The city water samples are better than the last samples examined. The drive-well samples are an interesting series, of which No. 6 is the best water sent, and may well serve as your standard."

This No. 6 was from a drive-well in the pure gravel in the very upper and recently settled part of the First Ward, near St. John's hospital. The other drive-well specimens from the Third and Fourth Wards, locations long settled and long exposed to soil pollution, are pronounced to be "doubtful" waters. A lesson for the future is to be learned right here.

*The State Normal Building.*—The present sanitary condition of the State Normal School building is in general all that could be desired. With the new system of heating, and ventilation aided by the exhaust ventilating fan, which is run at all hours when the building is occupied, a supply of fully two thousand cubic feet of fresh air per hour is furnished to each pupil. The mechanical aid to the furnace heat makes it possible to maintain this condition during the warm days of spring and fall as well as in midwinter.

The closets are situated in the basement and are ventilated by a current of warm air from the building passing underneath the seats and out through the main ventilating shaft. While no serious inconvenience arises from this arrangement, it requires watchful care, lest under certain atmospheric conditions, when the ventilating fan is not running, the outward current may be reversed. To avoid this danger a small heating furnace has been placed in the base of the ventilating shaft for the purpose of maintaining the proper outward current of air at all times. Notwithstanding these careful arrangements and the consequent freedom from annoyance, no system of closet ventilation which admits a possibility of a reversal of the proper current of air can be called ideal.

*Public High School Building.*—The high school and central building have in operation the Ruttan system of heating and ventilating, which proves to be eminently satisfactory.

The furnaces are powerful and capacious, easily supplying, through a system of direct flues and large registers, an ample volume of warm air which can be regulated by the teacher according to the requirements.

After warming the school rooms, this air passes out through grated openings and is carried under the floor to the foul air room in the basement. From thence it is drawn through the closet vaults into a large foul air shaft in which a small furnace is kept burning.

The Smead dry closet, which is also in use in the two buildings above mentioned, is to be commended as one of the greatest of improvements in school sanitation. The closets are placed in the basements, and all the foul air from the rooms passes over the deposit on the way to the ventilating flue evaporating all moisture, leaving the residue dry and inoffensive, ready to be disposed of by being burned in the furnaces.

In the case of the Central building, there was some difficulty in adapting the new system to the old building not constructed for it, but the difficulties were discovered and were all obviated by increasing the size of the register and enlarging the foul air ducts, so that the system now works perfectly in the building.

The Jefferson and Jackson buildings are heated by Boynton furnaces and have substantially the same system of ventilation as the Ruttan, passing the foul air from the rooms through grated openings under the floor into a large shaft heated by the smoke pipes from the furnaces.

While there has been no trouble in heating these buildings, the ventilation has not been perfectly satisfactory. In fact, although the Board has tried to remedy the defect in the rooms on one side of the Jefferson building, there is still cause for serious complaint. The privies are outside in separate buildings but are so arranged that they can be readily disinfected and cleaned.



The Madison and Washington buildings are heated by the Columbia furnace, which supply sufficient heat in the coldest of weather, but the means of ventilation are inadequate, and the old method of opening windows to secure the requisite amount of fresh air has to be resorted to. The privies at these buildings must not be tolerated with their present arrangement.

*City Hospital and Lock-up.*—The city hospital, or pest-house, has been abandoned and removed, and the grounds are to be appropriated for a public park. A new hospital is soon to be built on the south side of Lake Winona.

The city lock-up is at the present time being greatly improved by extension of the building mainly for the purpose of improving its capacity, ventilation, and general sanitary condition.

*St. Johns Hospital.*—One of the latest and best improvements in this city is the establishment of the St. Johns Hospital. The hospital building is large, three stories high, with an airy basement. It is situated in the healthiest and most pleasant part of the city. Its wards and rooms are models of neatness and are made comfortable for patients. The heating and ventilation of the whole building is excellent. Patients of all classes are received here at moderate rates, and the institution has already been of advantage both to the city and country.

*Slaughter Houses.*—There are three slaughter houses in the city, the largest of which was constructed and is operated strictly upon the Abbottoir plan. All are favorably situated, are under constant inspection and are kept in fine order.

*Disposal of Garbage.*—Two dumping grounds are established in accordance with city ordinance. One is for inoffensive manure, ashes, etc., and men are kept here by the owner of the land, who are at work constantly covering everything brought to the ground. The other, more remote from the settled parts of the city, is for the contents of privy vaults and other offensive offal, and all deposits here are covered in trenches by scavengers making use of the ground.

*Sewerage.*—We have as yet no public system of sewerage. There is a prospect now that the city council will very soon adopt some one of the many systems proposed, and that the work will go forward the present season. The city demands it and must have it, and some public buildings and improvements now undertaken make the matter of immediate work in this direction imperative.

*Sidewalks.*—There has been a valuable improvement made during the past year in putting down permanent walks of stone, artificial stone, or tar and asphalt, in the place of the old, decaying wooden walks. It would be a worthy movement for the city council to pass an ordinance prohibiting the use of wood for sidewalks.

*Vital Statistics for the year ending April 30, 1889.*—The following number of deaths have occurred from the causes specified: Cholera infantum 7; cholera morbus, 4; membranous croup, 8; diarrhoea, 18; dysentery, 1; diphtheria, 13; erysipelas, 4; scarlet fever, 1; typhoid fever, 5; measles, 5; septicaemia, 1; cancer, 9; dropsy, 3; phthisis, 24; apoplexy, 2; infantile convulsions, 9; meningitis, spinal, 1; meningitis, 8; paralysis, 6; tetanus, 1; ovarian tumor, 3; heart disease, 14; heart failure, 1; bronchitis, 3; pneumonia, 15; typhoid pneumonia, 1; cirrhosis of liver, 1; gastritis, 1; peritonitis, 3; catarrhal fever, 1; malarial fever, 1; diabetes, 2; puerperal fever, 4; asthma, 3; inanition, 2; atelectasis, 1; ascitis, 2; inflammation of bowels, 2; puerperal fever, 1; hepatitis, 2; hemorrhage from tooth, 1; puerperal hemorrhage, 1; drowning, 1; killed by cars, 3; scald, 2; accident, 3; unknown, 24; old age, 9.

The total number of deaths from all causes during the year was 230, which for a population of 22,000 gives only a fraction over one per cent. The total number of births in the city for the same time was 732.

While it is true that certain improvements are needed, and that much watchful care and good sanitary work will be required, yet the city of Winona has reason to be proud of its sanitary record. It is not true that we are situated on low ground, and that there is any marsh malaria anywhere about. The sandy soil and deep underlying gravel beneath the city and all around under lake and river, renders impossible any saturation such as occurs in clayey soil with underlying strata of hard clay or rock. Besides this, the great Mississippi, flowing on by the side of the city, renders our condition very different from what it would be were we on the shore of a lake. The dry sand and gravel gives us the best foundation for our buildings, and a freedom from moisture in cellars and the decay of wood and vegetable matter beneath and in our houses. The high bluffs in the distance around us in a measure protect us from the severe winds of winter, while our forest of shade trees protect us from some of the heat of summer. Our parks, our wide and well kept streets, our green lawns, are not watered by foul water from a stagnant lake or a river, laden with organic matter ready to decompose upon exposure. These and other things are among the causes of our city's healthfulness.

## DISEASES OF ANIMALS.

U. S. DEPARTMENT OF AGRICULTURE,  
BUREAU OF ANIMAL INDUSTRY,  
WASHINGTON, D. C., July 8, 1889. }

Dr. C. N. Hewitt, Secretary State Board of Health, Red Wing, Minn.:

DEAR SIR.—Referring to your favor of the 3d instant, inquiring as to the latest information in regard to venereal diseases of horses, would say I know of nothing that would be of special value to you except what is contained in the latest editions of the standard works on the diseases of horses. I do not know of any cases of *maladie du coït* in your section of the country; but I have not been giving special attention to this subject.

Actinomycosis undoubtedly exists in all parts of the country; but there seems to be more activity at all the large slaughtering establishments to prevent the beef of affected animals going upon the market, than has ever been known before. It does not appear to me that there is any special danger from this malady, although I am in favor of condemning the carcasses of all animals that are affected with any serious disease.

Yours,

D. E. SALMON, Chief of Bureau.

## LABORATORY NOTES.

THE SANITARY EXAMINATION OF WATER, FOR THE USE OF HEALTH OFFICERS. (Continued from the June number.)

The effect of long boiling is to drive off carbonic acid, and to precipitate nearly all the lime as carbonate. All the silica and most of the iron which may be in solution are also thrown down. The sulphates and chlorides of lime are not affected but remain in solution, if the loss by evaporation is made up; and the carbonate of magnesia, thrown down in the hot water, is re-dissolved when the water cools.

These salts which remain in solution *after* boiling make, what is called, the *permanent* hardness, and in proportion to their character and amount, affect the value of the water for cooking, laundry, and manufacturing purposes.

The alkaline salts, carbonates and sulphates of soda and potash, soften the water containing them, and by so much diminish the hardness produced by the earthy salts. It is this quality which expiates the domestic use of wood ashes, or "washing soda," to soften hard water.

*Mineral matters in water.*—The most popular question as to water is, "How much mineral, (lime, magnesia, iron, etc.,) does it contain?"

There is often a good deal of humbug in the answer given. An accurate one is difficult even in a well ordered laboratory. Fortunately such accuracy as the question implies is not needed to judge of the sanitary quality of a given water.

The "alkalinity," (described on page 40,) expressed in terms of carbonate of lime per American gallon, though, as a rule, a trifle less, is about equal to the carbonate of lime actually present. To this rule there is an exception in some of our artesian wells, and the shallow wells of the Red River valley, due to the excess of soda or potash salts. To avoid error, take alkalinity of boiled as of the fresh water, subtract the one from the other and the remainder will not be far from the lime as carbonate.

The French estimate the lime by the soap test. It is easily done and without loss of time as the same lime-free water serves for the estimate of the magnesia by Wanklyn's method.

Make a saturated solution of oxalate of ammonia by adding to two ounces of distilled water, in a bottle, more of the salt than will dissolve. Label the bottle, "Sat. oxal. amm. sol." Now take half a pint of the water to be tested and add one drop of the oxalate for every measure of soap solution used to get "total hardness" (p. 40). The lime will go down as a white precipitate; when the water is clear take a little in a small test tube and add a fraction of a drop of the oxalate; if it becomes cloudy the lime is not all precipitated and you add a full drop to the half pint, stir it and wait another precipitate, then repeat the test, and if there is more cloudiness add another full drop to the half pint. One or two trials will remove all the lime and leave no excess of oxalate, which is to be avoided. The lime removed in this way, take the "hardness" of two ounces (p. 40), and the difference between it and the "total hardness" gives you the lime as carbonate. The same test gives you magnesia as carbonate, if you remember that it consumes one and one-half times as much soap solution as does lime, so that you figure the value of the soap solution as one and one-half measures, 45 minims, equal to 0.02 grains carbonate of magnesia. The magnesia result is very nearly correct, usually.

*Chlorine.*—Our readers have noticed the importance assigned to chlorine in our analyses, not because of itself but because, after hundreds of analyses, we have a fair standard of chlorine for Minnesota waters, beyond which any marked excess is evidence of sewage pollution. The test is a very easy one with which all Health Officers should be familiar. The test solutions are, *Nitrate of silver solution*: Nitrate of silver, (dry and pure crystals) 15 grains; distilled water, 4 ounces. Mix.

The solution is very sensitive to light, so that it must be kept in ground stoppered bottles, thoroughly protected from the light by a black, paper or cloth, covering. This solution is so graduated that 30 minims, (half a fluid drachm) are equal to 0.05 of a grain of chlorine.

The other solution is made as follows:

*Chromate of potash solution.*—Chromate of potash, 1 drachm; distilled water, 4 ounces. It is not affected by light. Bottle and label "Chrom. potash."

These solutions prepared, you are ready to test for chlorine. Take a white tea cup, into which pour four ounces of the water to be tested, add half a drachm of the chromate solution, and mix with a glass rod (a pocket thermometer serves nicely). The water takes the bright yellow color of the chromate. Now you may add the silver solution drop by drop from a 2-drachm graduate, but a pipette of one or two drachms' capacity, graduated in minims, to be stopped by the moistened finger, is much better. (They cost about 40 cents.)

You notice as the silver solution is added each drop makes a bright red color which, as you stir the water, is soon lost, but as the test nears its conclusion the red tint is more persistent and disappears more slowly. Be very careful now, and when the yellow color of the chromate becomes, in the slightest degree, red, you are through. To be sure, just when this change occurs, make it a rule to have four ounces of the water in a similar vessel in which you have put the same quantity of chromate solution, as a standard of color. Two wide mouthed, 4-oz clear glass bottles, standing, when in use on a white soup plate, will be just the thing for this test. As soon as the change of color has taken place, see how many minims of the silver solution were used; 30 minims equals .05

of a grain of chlorine; 60 minims 0.1 and so on. Four ounces is contained in the American gallon 32 times. Suppose you used 70 minims of the silver solution: 30 minims equals 0.05 grains. Hence the proportion, 30: 70:: .05; (the answer,) .1166, which multiplied by 32, gives the number of grains of chlorine in the gallon, in this case 3.73.

To convert the chlorine into terms of common salt—chloride of soda—multiply by 1.65. In this case 3.73 grains chlorine, multiplied by 1.65=6.19 grains of salt to American gallon.

The average of chlorine in *well waters*, declared pure after analysis, for the whole State, is about one grain to the gallon, or 1.65 grains salt.

*Of spring water*—572, or .948 grains of salt.

*Of artesian well waters* the average is more than 4 grains of chlorine, or 6.60 grains of salt in Red River valley, and 2.5 in rest of State.

*Of river waters*—Mississippi—5894 grains of chlorine.

*Other rivers*, about .3 grains of chlorine.

*Lake water*, about 0.157 grains chlorine.

Surface wells in the Red River valley average more than 3 grains in American gallon, while the deep wells average less than .2 grains.

The corrected returns for six hundred analyses now being worked out will change these averages some, but an excess of chlorine in the American gallon, *for lakes*, of over .2 grains; *for rivers* of over .5 grains; *for springs* of over .9 grains; *for wells*, other than drilled or artesian, of over 1.5 grains would justify a reasonable suspicion, and further examination.

—C. N. H.

(TO BE CONTINUED.)

#### WATER ANALYSES IN JUNE, 1889.

*St. Peter*, public supply and others for comparison, six samples. *Belle Creek*, Goodhue county, one sample; well. *Winona*, public supply and others, six samples. *Stillwater*, public supply, three samples. *Red Wing*, public supply, filtered and unfiltered; repeated. Cistern waters, two samples. Public supplies, fifteen samples; private, six samples; total for month, twenty-one.

#### ANALYSIS OF STILLWATER WATERS.

Results expressed in parts per 100,000. Multiplied by 0.584 gives grains per American gallon.

SOURCE	DATE	SOLIDS		Nitrites	Nitrates	Chlorine	Oxygen used	Ammonia		Total
		Total	Volatile					Free	Alt.	
McKusick spring .....	July, 1880	20.0	4.0	.....	.....	.40	.....	.0160	.0040	13.5
.....	1889	21.0	5.0	.....	.....	.572	.067	.0060	.000	.....
Spring, upper service {	" 1889	.....	.....	Slight	.....	.857	.075	.0093	.000	18.0
Pap in Dr. M.'s house {	"	.....	.....	.....	.....	.....	.....	.....	.....	.....
Artesian well, running {	" 1889	23.5	4.5	.....	.....	.572	.014	.0032	.000	20.0*
into McK. spring.. {	"	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spring, supplying {	" 1889	37.0	10.0	.....	.....	.857	.230	.0640	.0020	28.0†
State prison .....	"	.....	.....	.....	.....	.....	.....	.....	.....	.....
McKusick lake .....	" 1880	13.2	6.8	Trace	Trace	.30	.....	.1200	.0200	10.0
" .....	" 1883	18.0	14.0	Marked	Trace	.20	.901	.0100	.0120	14.3
" .....	" 1889	13.5	5.5	.....	.....	.381	.749	.0050	.037	.....
St. Croix river, above {	" 1880	10.8	4.4	None	Slight	.40	.....	.0080	.0170	7.5
city .....	"	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Croix river, be- {	" 1880	11.5	5.3	Trace	Trace	.30	.....	.0220	.0120	8.0
low city .....	"	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Croix river, above {	Dec. 1886	15.0	2.0	None	.0040	.150	.604	.0025	.013	.....
city .....	"	.....	.....	.....	.....	.....	.....	.....	.....	.....
St. Croix river, be- {	" 1886	.....	.....	None	.0040	.140	.750	.0050	.014	.....
low city .....	"	.....	.....	.....	.....	.....	.....	.....	.....	.....

\*Temporary hardness, 17.0; Permanent, 3.0.

†Temporary hardness, 22.5; Permanent, 5.5.



# PUBLIC HEALTH IN MINNESOTA.

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VOL. V. NO. 6.

AUGUST, 1889.

WHOLE NO. 54

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JULY, 1889.

### DISEASES OF MEN.

Diphtheria.....	}	cases, 66
		deaths, 14
Scarlatina.....	}	cases, 58
		deaths, 5

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	32
Reported during the month.....	6
Killed.....	10
Released.....	5
Isolated.....	1

Remaining Aug. 1st, 1889, isolated or not accounted for..... 23

NOTE.—Most of these are cases exposed, and isolated for further observation.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF JULY, 1889, AS REPORTED UP TO AUGUST 20.—  
(Population, estimated 1889, cities over 2,000 inhabitants, 539,000; towns and villages, 1,047,860.)

Total number of deaths, 938, an increase of 118 over last month, 538 males and 400 females; 68.44 per cent occurred in cities over 2,000 population. Ages, under 1 year, 44.67 per cent; 1 to 5 years, 15.67 per cent; 5 to 15 years, 4.79 per cent; 15 to 30 years, 10.34 per cent; 30 to 50 years, 9.38 per cent; 50 to 70 years, 7.67 per cent; over 70 years, 5.97 per cent. Of 419 deaths under 1 year old, 77.56 per cent were in cities; from 1 to 5 years, 76.86 per cent in cities.

*Measles*—11 deaths (8 males, 3 females), in 10 localities, 10 counties. A decrease in mortality and distribution compared with last month, and the same month in 1888; 27.27 per cent occurred in cities; 5 deaths were under 5 years, 5 between 5 and 30 years, and one between 50 and 60 years.

*Scarlatina*—11 deaths (8 males, 3 females), in 9 localities, 8 counties; 45.45 per cent in cities. Mortality less but distribution same as last month. Ages, under 5 years, 63.63 per cent; between 5 and 15 years, 36.36 per cent.

*Diphtheria*—17 deaths (8 males, 9 females), in 6 localities, 6 counties; 76.44 per cent occurred in cities. A decided decrease in mortality compared with last month, and the same month of 1888. The smallest number of deaths in one month from this cause ever reported. Ages under 5 years, 58.82 per cent; 41.18 per cent between 5 and 10 years.

*Croup*—6 deaths (5 males, 1 female), in four localities, 4 counties; 66 per cent occurred in cities. Mortality same as last month. Ages, all under 5 years.

*Typhoid Fever*—13 deaths (9 males, 4 females), in 4 localities, 4 counties. Only 1 occurred outside the cities. Ages, between 15 and 20 years, 15.38 per cent; between 20 and 30 years, 61.53 per cent; between 30 and 40 years, 23.09 per cent. Mortality and distribution less than last month; about the same as same month last year.

*Diarrhæal Diseases of Children*.—252 deaths (144 males, 108 females), in 29 localities, 14 counties; 89.68 per cent occurred in cities; 75 per cent under 1 year old; 22 per cent between 1 and 2 years. The usual increase in mortality and distribution for this month; slightly greater compared with same month last year.

*Bronchitis*—18 deaths (8 males, 10 females), in 5 localities, 5 counties; 15 per cent occurred in cities. A slight increase compared with last month, and less than for same month last year.

*Pneumonia and Pleurisy*—23 deaths (14 males, 9 females), in 9 localities, 9 counties; 16 per cent occurred in cities. Decrease in mortality and distribution compared with last month. Ages, 69.56 per cent under 5 years old.

THE DIPHTHERIA record for the last month is the most encouraging we have had in the long struggle to reduce the prevalence and mortality of this persistent and fatal disease. Its pathology has until recently been in dispute and its treatment has been as various, almost, as the localities in which it has appeared.

There is scarce a doubt now that the power of generating the peculiar poison belongs to a bacterium which, so far as now known, lives only in the exudation, never penetrates the fluids or tissues of the body and disappears with the exudation almost entirely, if not wholly. This specific poison, the product of the bacillus, acts like a colloidal body and dialyses very slowly through animal membranes; it has been detected in the glandular tissues of the body, the juice of which extracted, antiseptically filtered and injected into guinea pigs and rabbits, induced all the symptoms of diphtheria, less the exudation, which the bacillus alone is proven to cause. This much seems very likely from the reports of Roux and A. Yersin, which we translate from the last number of *Annales de l'Institut Pasteur*, and to which we ask the attention of all interested.

THE following letter from Bishop Whipple is a loving tribute to Dr. Hand's memory and to the work of public health:

FARIBAULT, July 5, 1889.

Chas. N. Hewitt, M. D.,

MY DEAR DOCTOR:—I have been confined to my room for three weeks, but your little pamphlet on public health reminds me of a duty that I owe in com-

mon with our fellow-citizens, to express my deep sense of obligation for the faithful work of our State Board of Health.

I felt deeply the death of Dr. Hand, as a personal loss. He was one of the noblest and truest men that I ever knew. His long and faithful labors as a member of our State Board made him a public benefactor. It is the misfortune of your profession that most of its self-denying work for others has no public recognition. No one can tell what blessings have come to our State by a better knowledge of the good laws of Our Father in Heaven. These sanitary measures which you are seeking to introduce are as old as the laws of Moses and without them he could never have protected that race of freed bondmen in their strange journey to the Promised Land.

I have so often seen the fruits of your labors in my travels throughout the State, that I felt I must write to you these few words. Assuring you and your fellow workers of my faithful appreciation of your work for the good of others, I am faithfully yours,

H. B. WHIPPLE,  
Bishop of Minnesota.

#### COMPENSATION FOR QUARANTINE.

THE following extract from a leading article in *Harper's Bazar* of May 25, is a view of the subject worth considering, and it is so happily put that we need no apology for reprinting it:

*Compensation*—"My boys and I have been shut up together for six weeks," said a little woman the other day, her bright face dimpling with sunny smiles, showing how sweet and fresh is the quality of youthfulness which makes the matron as captivating in her meridian as the girl must have been in the morning. "Quarantined," she added, "and we've had a siege of it; but the dear lads were never really ill, notwithstanding the dreadful character of the disease which had them in its clutches. Of course we were terribly anxious, and the doctor kept warning that we could not be too careful; and I had such a horror of any infection wafting itself from our doors into the home of somebody else where there were children, that I could not sufficiently multiply precautions; but when all was said, and all the privations and disappointments borne, there were compensations. The boys and I grew so well acquainted! We read several splendid books through, from the first chapter to finish; we studied the New Testament; played games. They told me everything, just as when they were my babies toddling over the floor and coming to mamma with their questions and troubles; and now that it is over I shall always look back with a certain gratitude and pleasure of memory on our six weeks in quarantine."

THE SANITARY CONFERENCE at Stillwater, called for July 2, was adjourned because of the absence of the Secretary of the State Board, who was unavoidably detained, but arrived in time for the evening meeting. This was so thinly attended that after a vigorous commentary by the Mayor, upon popular apathy as to sanitary improvement in the city, it was determined to have a popular meeting in the high school room, on Sunday, July 28, which proposition met with the approval of the leading clergy of the city, who were present. The meeting was a success, largely

because these public spirited gentlemen exerted themselves. To Prof. Wilson, the superintendent of the city schools, the working of the details of the evening was entrusted; they included the use of the stereopticon in a new field, and many bothersome arrangements which tested both his tact and his good nature. Despite them all the meeting was a good one, and the speakers kept fairly to their texts. He whose duty it was to bring up the rear and close the work, has abundant reason to be thankful for the hearing given and for the hearty vote of thanks. Prof. Wilson promises further co-operation in arranging another stereopticon exhibit, and it is not unlikely that a formal discussion of some important local sanitary questions may grow out of it.

THE MEDICAL HEALTH OFFICERS, of the Province of Ontario, Canada, met this year in the city of Brockville, on the St. Lawrence. The meeting occupied two days, August 20 and 21. The sessions were full of interest, and the papers covered a wide range of thoroughly practical questions by active Health Officers. The question of the organization of a Dominion Board of Health was introduced by a paper on the subject by Dr. E. Playter, of Ottawa. The doctor proposed a Board of Health for the whole of Canada. The project met with a very vigorous opposition. I did not hear the discussion, which was one-sided of course, because none of the Quebec representatives, who had been invited, were there; but I had very frank conversations with several of the most progressive of the delegates. The fault of Dr. Playter's proposition was its lack of definite plan. No one seemed inclined to dispute the abstract proposition that a properly constituted Dominion Board of Health would be of advantage. Just what it should be in organization and powers, and its relations to the Provincial Boards, no one attempted to define. I did not wonder at the feeling which the proposition aroused. The fact is, that the Provincial Boards are still not fully grown, and the Local Boards are in a formative stage. Sanitary organization to be of any value after its preliminary stage, must be the outgrowth of sanitary necessity. A "hide-bound" code developed in the library, meets theoretical and scholastic conditions better than any existing working organization; but it cannot stand actual trial. This very self-evident and important fact to working Health Officers, seems hidden, or only dimly apparent, to a very considerable body of



writers on sanitary methods. They get very impatient at the lack of what they like to call "system and orderly arrangement." All this admitted, working Health Officers can afford to wait no longer than till they learn positively what ought to be done, to get about the doing, or having it done. We must hurry, of course in a reasonable way, to keep pace with the advance of knowledge, and the increase of opportunity. The agitation as to Dominion organization in sanitary matters has only begun. A few such discoveries as Dr. Bryce made, just before this meeting, in the matter of a fatal and dangerous outbreak of an infectious disease among horses in the northwestern counties of Ontario, which had prevailed for two years unnoticed, will awaken the Parliament to some legislation, as likely wrong as right, if the sanitary authorities are not prepared with proper plans for the work.

The social side of the meeting was delightful, everybody exerting themselves to make the visitors to the city enjoy their visit. The excursion among the Thousand Islands of the St. Lawrence, was a charming panoramic exhibition of the magnificent capabilities of the locality, and the royal way in which they have been used.

The day after the adjournment, I made one of a little party of gentlemen who were the guests of Dr. Moore, of Brockville, on his beautiful steam yacht, *Pomona*. The entire day was spent in the tour of the Islands. The doctor's intimate knowledge of every locality gave us the finest views and landings. The day closed after a one hundred mile trip, at Ogdensburgh. It is a very happy combination of faculties which the doctor has—physician, health officer, skipper, engineer and host—he was at home and happy in every position, and provided a constant supply of enjoyment for his guests.

C. N. H.

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**A**N IMPORTANT CONTRIBUTION TO OUR KNOWLEDGE OF THE SPECIAL POISON OF DIPHTHERIA.—No apology will be needed to our professional brethren for the translation, which I submit below, of a very interesting report of original researches respecting the specific virus of diphtheria. It appears in the June number of the *Annals de l'Institut Pasteur*; the authors are E. Roux and A. Yersin. It resumes, also, the conclusions of another report, by the same authors, in the December number of the *Annals*. Details not essential to the clear statement of their conclusions are omitted.

C. N. H.

The first conclusion is, "The bacillus discovered by Klebs in the false membranes, and isolated, afterwards, by Loeffler, is the cause of diphtheria." Their proof is the inoculation of a pure culture of this bacillus upon the wounded

mucous surfaces of rabbits, guinea pigs, pigeons, etc., producing thereby characteristic false membranes. Injected under the skin it caused oedema at the point of inoculation, a general dilatation of the blood vessels, with congestion of the intestines and kidneys, and death. In the guinea pig they found, beside and almost always, redness of the supra-renal capsules and serous effusion in the pleuræ. In the rabbit there was no pleuritic effusion but the liver was often the seat of fatty degeneration. When death did not occur too soon they observed in these animals, paralyses resembling those which occur in man. Another very important conclusion is that "The bacillus of diphtheria does not multiply in the organs of the body, but is found only at the point of inoculation, and disappears entirely if the disease is prolonged. Diphtheria is, therefore, an intoxication caused by a very active poison formed by the microbe in the limited place where it grows." The authors give as proof of this statement, their demonstration, by repeated experiment, that in pure cultures of the diphtheritic bacillus, there exists a special chemical substance which, injected under the skin of animals, gives them the disease, in the absence of any living microbe. A sufficient dose produces a rapid intoxication, with all the symptoms and the lesions which follow the inoculation of the bacillus itself except that the false membrane is not produced. Animals who have received feebler doses often develop typical diphtheritic paralyses." The peculiarities of the virus as developed by experiment are very curious and interesting. Omitting many interesting details of methods the bacilli are separated from culture fluids by a filtration through porcelain, so that the filtrate is deprived of all life and owes any property it may exhibit to chemical compounds in solution. Such a culture, forty-eight hours old, furnished a liquid so active that three minims injected under the skin of a guinea pig killed it in thirty hours. This virulent poison acts energetically on sheep and dogs. In the last we can induce an acute diphtheritic intoxication or chronic poisoning with characteristic paralysis. Mice and rats, very curiously, resist without sickness, doses fatal to dogs.

This poison is affected by heat in proportion as it is elevated and prolonged. A filtrate of which less than two minims were fatal to a guinea pig, when heated to 58 C. (136.40 F.) for two hours before use, did not kill in a dose eight times as great, but it produced oedema at the point of injection and was easily fatal to small birds. The same liquid, heated to 212° F. for twenty minutes, injected into the veins of rabbits in the dose of over 500 drops did not cause any immediate sickness, though eight drops of the solution, before the heating, were promptly fatal. Though they had no appreciable immediate effect, these heated solutions were, usually, after a long or shorter time, fatal, the animals lost flesh, though eating as usual in health, and exhibited symptoms of paralysis a few days before death. Their sickness was like that induced by the filtered urine of diphtheritic patients, or by maceration extract of the organs of persons dead of infectious diphtheria, injected into rabbits or guinea pigs. Those experiments seem to prove that the bodies of the dead of diphtheria do contain the same poison as is found in pure cultures of the bacillus of the disease.

The reaction of a feebly alkaline veal bouillon used for this culture becomes acid for the first few days, and alkaline afterwards. So long as the culture is acid its poisonous properties are not great, and a large quantity must

be injected to produce the acute disease, but later on, when the reaction becomes alkaline, its toxic properties are largely increased. Filtered cultures, away from air and light in sealed vessels, were as active as ever after five months. In sealed tubes they lost very little toxic power after ten hours exposure to sunlight. Put into tubes, tamped with cotton, through which the germ-free air could get into the culture, and exposed to sunlight two hours, the culture was fatal to guinea pigs after a long time, while after five hours' sunlight the same culture caused only local oedema.

In those experiments the cultures were never warmer than 86° F., and the results resemble those of similar experiments with the diastases as respects the operation of light, heat and air.

The authors raise the question: Will the addition of an acid to an alkaline culture diminish its poisonous quality? They took an active culture and making it positively acid, injected fifteen drops under the skin of a guinea pig causing slight local oedema quickly recovered from, but seven drops of the alkaline liquid used in the same way was rapidly fatal to another one, and with the ordinary lesions. They found also that if this acid fluid is again neutralized it recovers almost all its original virulence.

They tested the filtered culture in another way, over sulphuric acid in vacuo. The extract was intensely virulent. Alcohol dissolved some of it; but the solution was not poisonous. The extract of 100 c. c. of filtered culture, (after extraction by alcohol) and again drying, was dissolved in 5 c. c. of pure water and poured into a dialyser. A single drop killed a guinea pig. The outer vessel of the apparatus contained 10 c. c. of pure water, (everything sterilized of course) and after 24 hours some of this water injected under the skin of a guinea pig caused death in four days with characteristic lesions. The poison had therefore passed through the membrane; and by a trial every succeeding 24 hours for four days, the virulence of the outer solution was found to have increased. The solution in the inner cup had diminished to two-fifths and its virulence was less. Their practical conclusion is, that the poison of diphtheria diffuses itself slowly, its action being first local, causing oedema, and then, little by little, into the body. The poison is not crystalizable and its diffusion is much slower than if it were.

Another curious result of their experiments was that, like the diastases, the poison of diphtheria will adhere to certain precipitates produced in the fluids in which it is dissolved. The most efficient precipitate was found to be the phosphate of lime by the addition of a solution of the chloride of the same salt to the filtered culture. By careful management they succeeded in getting several precipitates instead of one, and in this way proved a gradual loss of virulence in the culture fluid, and also removed the great part of the poison adhering to the precipitates, which, carefully washed on filters with sterile water, were found, in small doses, inserted under the skin, to cause death in four days, the lesions being more severe than those of the original culture. The granules of phosphate of lime were found entangled in a web of fibrine, mixed with white blood cells, a veritable false membrane, which suggested that caused by the injection of the microbe itself. Just as the microbe elaborates, at the point of inoculation, the poison which diffuses itself slowly, so the precipitate parts very slowly with the poison which adheres to it very



strongly. At the moment of death all its poison has not been lost, for if it be carefully removed with a little of the œdema which surrounds it, and be inserted under the skin of another guinea pig, it will produce there the characteristic symptoms of diphtheretic poison as before.

They attempted to get a precise idea of the power of the poison and of the weight of the dose sufficient to kill a guinea pig or a rabbit. They found it always associated with other matters, and as difficult to isolate as the diastases it so closely resembles.

Fifteen drops of a filtered culture, when dried, left a residue weighing 0.154 of a grain. Deducting from this the weight of the ash and the portion soluble in alcohol, neither of which are poisonous, there remains but the .006 of a grain and the most of this is made up of other substances than the diphtheritic poison. This infinitely small dose is sufficient to kill at least eight guinea pigs, or two rabbits, and injected into the blood of a dog, it would make him very sick for a long time, if it did not kill him. But this poison, so fatal if introduced under the skin, may be eaten in large quantities by the same animals with impunity.

As the conclusion of their experiments the writers believe that the diphtheritic poison resembles the animal ferments (diastases as pepsin, pancreatine, and the like) and its activity is comparable to that of these substances, and even more to the venoms.

They conclude their paper in these words: "It is very difficult to accustom animals to this poison because of its activity. Even in very feeble doses it produces effects which are very enduring. It is because of this energetic toxic power that we ought to prevent the formation of false membranes in the sufferers from the disease. If you allow the bacillus time to produce a sufficient dose of the poison, it will be of no use to destroy the croupal membrane or the bacillus itself, death will be caused by poisoning, for in diphtheria, contrary to what occurs in many other infectious diseases, the infection is not produced by a microbe invading the tissues, but by the diffusion through the body of a toxic substance produced upon a mucous surface, by a specific bacillus, and, so to speak, outside the body."

#### SANITARY QUESTIONS AND ANSWERS.

[T. C., abbreviation for Town Clerk; C. B. H., for Chairman Board of Health; H. O., Health Officer; L. B. of H., for Local Board of Health.]

*A slaughter house nuisance—Violation of orders of Local Board of Health and their action—Attorney-General's opinion.*—A Local Board of Health issued the following notice, signed by the Secretary of the Board, concerning a slaughter house in the village complained of as a nuisance, source of filth and cause of sickness:

First—That the proprietor be required to clean up said premises, removing, burying or burning all filth that is offensive and dangerous to health, forthwith.

Second—That within thirty days from date the proprietor of said slaughter house be required to remove his business to some other locality to be approved by the Board of Health.

Third—That after thirty days from date no slaughtering, whatever, shall be allowed south of the slough lying north of the townsite.

After issuing the above notice and the time mentioned had expired, the proprietor of the slaughter house mentioned slaughtered contrary to the order of the Board. They had him arrested and he paid the fine without any fight.



In a day or two another butcher had an animal slaughtered in the slaughter house in violation of orders published. He was arrested and his trial set for July 16. The County Attorney, who had charge of the case for the prosecution, was called away and left it in charge of another attorney who said the Board had no case, and would be beaten but gave them no good reason why he advised them to dismiss the action, which they finally, though reluctantly, did, as there was no other local attorney except the one for the defense. The township is incorporated in the village, and the townsite as registered south of the slough is what they intended their order to cover. They ask whether the above order is good, and who is the usual prosecutor of such cases. Is it the duty of the County Attorney?

July 19 the Secretary referred the matter to the Attorney-General in a letter as follows:

"The enclosed correspondence raises a question which has hitherto not been decided. The County Attorney tried and won the first case. In the next and apparently parallel case, another attorney, acting by direction of County Attorney, said there was no case. Is the attached notice sufficient? Should not it be signed by the Health Officer instead of by the Secretary of the Local Board of Health, an officer not specified in the law? The township is incorporated as the village. Who is properly the attorney of such a Board?"

July 23 the Attorney-General gave his opinion as follows:

"I think perhaps the order or notice should be signed by the Health Officer. The law is silent as to whose duty it is to prosecute in cases of this character. In cases where the law prescribes the fine, making the act a misdemeanor, it would be proper for the County Attorney to prosecute, and when the fine imposed is to be recovered in the name of the town, village or city, it would not, strictly speaking, be the duty of the County Attorney to bring suit for such fine, although I presume the question loses much of its importance in view of the fact that County Attorneys usually do not stand upon the strict letter of the law defining their duties, but undertake and conduct the suits and proceedings in the interest of the public. In the case under consideration inasmuch as the County Attorney secured one conviction, I would suggest that upon his return they lay the matter before him that he may bring such additional prosecutions as subsequent violation of the law warrants."

*Burials in a city of those dying outside from infectious diseases—Proper action of the City Board of Health.*—A city Health Officer asks certain questions as to his powers and duties in case of burial in his city of those dying outside of infectious diseases, to which the Secretary replied, August 1:

"In your place I would have required a certificate from the Local Board of Health that the body had been prepared for burial in accordance with the instructions of this Board, and it would be well now to notify adjoining towns that such certificate will be required hereafter for burials within your city limits of those dead of infectious diseases. You can certainly direct the routes for such funerals within the city limits. As to the fourth question, Sec. 27, Chap. 132, laws of 1883, provides that only such hearses or other vehicles as the Board may authorize shall be employed for infectious disease. As to second question any necessary inspection of the preparation of bodies should take place before the coffin is closed or the funeral takes place."

### MAY INSPECTION REPORTS.

FAIRMONT, (V.) MARTIN Co., DR. F. N. HUNT, H. O., JUNE 1, 1889.—*Infectious Diseases.*—Under this head we have no cases to report, excepting mild cases of measles.

*Glanders.*—One case of suspected glanders came to our notice May 20. Same was ordered isolated and has since improved, all symptoms having disappeared.

*Water Supply.*—On account of the extreme drouth, our wells have been sunk deeper and very little surface water is being used.

The annual inspection was made later than the law provides, June 1. At this date we find privies in fair condition. All nuisances removed, and our streets and alleys in good condition. The Board of Health has, during its brief existence—extending over a period of only

two months—caused the removal of at least fifty nuisances. The citizens seem quite ready to comply with the requests of the Board, and little trouble has been experienced in carrying out our plans.

We have no deaths to report from infectious diseases during the past year and have had less sickness than is common.

CANNON FALLS (V.) GOODHUE CO., DR. A. T. CONLEY, H. O., JUNE 20, 1889.—After notice being given that the inspection would begin on a certain day, I visited every part of the village, making personal inspection every where. In this work I secured the help of Dr. H. E. Conley, he making 25 inspections, and I, 104 inspections: total, 129; this being nearly, or quite, half the occupied residences in the village. The following were the points made in the inspection and carefully recorded in the Inspector's journal:

1. No. of inspected dwelling.
2. Name of family, and No. in family.
3. Condition of water supply.
4. Condition of cellar.
5. House slops and garbage and disposal thereof.
6. Condition of privy and outbuildings.
7. Barns, stables, manure piles, alleys.
8. Pigeons and No. of swine.
9. General sanitary appearance.
10. Note anything special.

These are some of the facts gathered. The whole No. of inhabitants occupying these 129 dwellings inspected 610, making the average a little less than five to each dwelling. There is a marked improvement in the general sanitary appearance over any previous year. Slops and garbage are nowhere left to accumulate about the dwellings; and while there were ten points to look after at each dwelling, making a total of 1290 in the 129 dwellings, yet only about 35 orders were given in all. Our people take pride in presenting a No. 1 sanitary home. It has done me good to find such carefulness, and I have not been slow to bestow praise where it was due.

I found 102 swine, and in almost every case the pens were large and clean. Yet I consider a hog a nuisance in the village, and hope we can sometime banish him within certain limits at least.

I believe the May inspection a grand thing, and believe it should be made as thorough as possible.

LANESBORO, (V.) FILLMORE CO., DR. J. C. HVOSLEF, H. O., JUNE 3, 1889.—Our May inspection did not find the village in as good a sanitary condition as we had been hoping for. The cause of this is partly the rather unfortunate manner in which the village was first laid out, and partly the neglect by some of the citizens to comply with the frequently repeated orders of the Local Board of Health. We shall, however, try all we can to have things, by and by, put in as fair a state as possible. The Local Board has repeatedly made endeavors to get the plats of the village prepared; but has always, so far, found the Council unwilling to incur the necessary expenses. It is, in the meantime, our hope that we shall be able to overcome this difficulty, and, when reporting next year, speak about the plat as an accomplished fact.

A good way of calling the attention of the public to the necessity of keeping their surroundings in a clean and healthy state, I have thought would be to distribute among the citizens the State Board's Circular on the May Inspection, and would like to get some copies of the circular mentioned for that purpose.

The stock and hog yards belonging to the railroad and located within the village, is a very great nuisance, and ought, unconditionally, to be removed from their present location. They are very rarely cleaned, despite the beggings and threats of the Board of Health. But even when cleaned they are constantly emitting an unbearable stench and polluting, in a most horrid manner, the air of the whole neighborhood. This very great nuisance ought not to be permitted any longer to remain within the limits of the village; but the Local Board of Health is, of course, powerless in a case like this. If an epidemic should appear, and the hog yards then, in all probability, prove a culture place for myriads of virulent bacteria, the citizens of Lanesboro, undoubtedly would have to destroy the whole establishment for the sake of removing such a direct danger to their very lives. It would, however, be better to have the change made while there is plenty of time yet, and before an occurrence as the one alluded to should take place.

MADOLIA (V.) WATONWAN CO., DR. W. H. SHAVER, H. O.—The village inspection was made on May 29 and 30 by all the members of the Board. Notice had previously been given through the *Madolia Times*, for the general spring cleaning. Everything was found in fair condition excepting a few remaining manure heaps. These were ordered removed at once. The Board have recently been discussing the propriety of abolishing the privy vault, and although there has been no official action taken in the matter, there seem to be a growing feeling that it

should be done. There has been no epidemics of disease during the last year aside from the influenza or catarrhal fever, which was so prevalent the last winter. There has been one case of diphtheria and four of measles, all of which recovered. The latter were introduced during the last month from Mankato and so far have been confined to the one family. All were promptly quarantined. The mortality during the year was only 0.55 per cent of what it was the year previous.

SAUK RAPIDS, (V.) BENTON CO., DR. S. A. ELLIS, H. O., JUNE 8, 1889.—I would respectfully report that I have made the annual May inspection of our village. Have ordered persons having barns to have the manure disposed of. Have also had all cess-pools, etc., attended to. I find, in fact, that our village is in a good sanitary condition.

WARREN, (V.) MARSHALL CO., DR. G. S. WATTAM, H. O., MAY 31, 1889.—In making our annual report for the village of Warren, I think we may congratulate ourselves on our present sanitary condition. During the past twelve months there has not been reported a single case of infectious or contagious disease, unless the very severe form that dysentery assumed during months of August and September be classified as such. This trouble, however, was not confined to the village alone, but was more prevalent than usual throughout the surrounding country. We have been more thorough in our "cleaning up" this year than usual. House and table slops are now placed in barrels and hauled away. Drainage has been greatly improved and a more careful supervision of our wells will be made. The inspection of animals about to be slaughtered, will begin June 1, notice to that effect having been published in the village papers.

#### LABORATORY NOTES.

THE SANITARY EXAMINATION OF WATER, FOR THE USE OF HEALTH OFFICERS. (Continued from the July number.)

*Organic Matter in Water.*—Under this title are included a great variety of living and dead animal and vegetable matter with the products resulting therefrom. Very few have any clear notion of the amount usually present in ordinary drinking water, which in the most marked of accepted waters is often too small for organic analysis, and but the small fraction of a grain. Fortunately it is the *quality* rather than the *quantity* of this organic matter which it is important to know, and for this there are several qualitative tests, which, with others here described, and the history of the water, enable one to arrive at reliable conclusions, though we cannot define the specific character of the organic matter detected. (See "Contribution to our knowledge of the special poison of diphtheria," in this number, for an estimation of *how little* of an organic poison may be fatal.)

Qualitative analysis for organic matter is often sufficient to detect suspicious or dangerous amounts, and to suggest the route to be taken, with other methods, to ferret out and develop the danger.

A large proportion of the poisons of specific disease, as also of ailments not yet defined but harmful, are either organic themselves, or immediately suggest their organic origin. The results of the decomposition of nitrogenous organic matter are, nitrous, or nitric acids, and ammonia.

*Tests for Nitrites.*—If in decided amounts their presence suggests the near neighborhood of decomposing organic matter. I quote two methods for detection of nitrites, which are very delicate if carefully used, and either of them will serve your purpose.

*Iodized Starch Test.*—It is best prepared as needed. The chemicals must be pure; but if you are not sure of that, make a trial test with freshly distilled water, at the same time with the water under examination. Grind up a grain



or two of starch in a little distilled water and add an ounce of boiling water; stir till the solution is clear. Dissolve in this solution, five grains of pure iodide of potassium, and when the mixture is cool it is ready for use.

Fill a large test tube with the water to be examined, and another with distilled water; add a little of the starch solution to each, and then three or four drops of dilute sulphuric acid. Should any color appear in the distilled water it is due to the presence of nitrous acid in the chemicals, and should be deducted from any color developed in the water under test. The color is in proportion to the amount of nitrous acid present, from a tinge of blue through all shades to dark blue-black. A positive blue shows enough nitrites to justify further inquiry.

The other test requires two re-agents, which can be supplied from our laboratory. They are solutions of naphthylamine hydrochlorate, and sulphanilic acid. Beside these have pure hydrochloric acid.

Prepare your samples of water as for the iodized starch test; then acidify each by a few drops of hydrochloric acid; add in succession, 30 drops each of the sulphanilic and naphthylamine solutions. Cover the mouths of the tubes and let stand for 20 minutes. The color varies from a pink blush to a dark crimson, according to the amount of nitrous acid present.

These tests are exceedingly delicate, and can be made quantitative if need be.

C. N. H.

(TO BE CONTINUED.)

#### WATER ANALYSES IN JULY, 1889.

*Alexandria*, well, public supply (sent by Health Officer), one sample. *Mankato*, (request city council), artesian wells, proposed public supply, two samples. *Stillwater*, (Health Officer and water company), springs, State prison and city supply, two samples; artesian well, city supply, one sample; lake (McKusick), public supply, one sample. *Red Wing*, (regular analysis), river water, public supply, over intake pipe, from pumps and from mains, three samples. *Springfield*, (Health Officer, by request village council), spring, one sample. Total, wells, one; artesian, three; springs, three; lake, one; river, three; public supply, eleven samples; all told, eleven.

The following is a report of these analyses, excluding those from Stillwater, reported in the last number of PUBLIC HEALTH, p. 56.

SOURCE	SOLIDS		Nitrites	Nitrates	Chlorine	Oxygen used	Ammonia		Total Hardness	Alkalinity
	Total	Volatile					Free	Alt.		
Alexandria, well at water works.....	46.0	.....	Marked	.....	3.335	.1313	.0160	.000	30.0	30.5
Mankato, artes. well, prop. public sup'y, artesian well.....	57.0	.....	.....	None	.7624	.0235	.0800	.000	*34.0	32.0
Mankato, proposed public supply.....	.....	.....	.0025	None	.7624	?	.7000	.000	34.0	34.0
Red Wing, Mississippi River, pub. supply over int'l pipe	19.0	6.0	.....	.....	.3574	.6816	Trace	.0220	12.5	.....
Red Wing, from pumps	19.0	4.0	.....	.....	.3812	.6336	.0040	.0240	12.6	.....
Red Wing, tap in laboratory.....	19.0	5.0	.....	.....	.3812	.5088	.0090	.0180	12.6	.....
Springfield, flowing spring.....	39.0	5.0	None	.....	.2880	.0000	.0230	Trace	33.0	35.0

\*Temporary hardness, 18.0; Permanent, 16.0.



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, August 15, 1889.

Quarterly Supplement to Report on Vital Statistics, }  
Second Quarter, 1889.

(NOTE.—In the following table of death causes.

**Puerperal Diseases** includes *Puerperal Fever*, and *puerperal septicæmia*.

**Diarrhæal Diseases** includes *Diarrhæa*, *Cholera Morbus* and *Dysentery*, of over five years of age.

**Diarrhæal Diseases of Children** includes intestinal diseases, under 5 years during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tubes Mesenterica*, *Hydrocephalus*, and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we have been unable to classify.

**Not Classified** includes deaths from certain specified causes, not included in the report following.

See page 44 for comments concerning mortality from certain diseases.

*MONTHLY STATEMENT OF BIRTHS—SECOND QUARTER  
OF 1889.*

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT QUARTER FILED IN THE OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO AUGUST 15, 1889).

GRAND TOTAL, 5971.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
SEX.	Males .....	51.35	5971	3066	.....	.....
	Females.....	48.06	.....	.....	2870	.....
	Unknown .....	.59	.....	.....	.....	35
COLOR.	White.....	99.94	5968	3064	2870	34
	Colored.....	.04	2	2	.....	.....
	Unknown.....	.02	1	.....	.....	1
CONDI- TION.	Legitimate.....	99.36	5933	3048	2852	33
	Illegitimate.....	.62	37	18	18	1
	Unknown .....	.02	1	.....	.....	1
NO. AT BIRTH.	Single .....	98.46	5879	3012	2836	31
	Twins .....	1.54	92	54	34	4
	Triplets .....	.....	.....	.....	.....	.....
PARENT NATIVITY.	Unknown .....	.....	.....	.....	.....	.....
	Both American.....	26.98	1611	818	787	6
	Both Foreign.....	55.15	3293	1699	1576	18
	Am'n Father—Foreign Mother....	5.49	323	154	171	8
	Foreign Father—Am'n Mother....	10.42	622	339	281	2
	Unknown .....	1.96	117	56	55	6



OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO AUGUST 15TH, 1889).

Per cent. of deaths during the month.	SEX.		SOCIAL STATE.				AGE.												NATIVITY.				PARENT NATIVITY.													
	Males.	Females.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.	Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.	Both Foreign.	American Father, Foreign Mother.	Foreign Father, American Mother.	Unknown.	*Localities Invaded	*Counties.		
.00	32	32	32	32	32	32	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	13	12	6	1	4	22	2	2	2	2	2	13		
1.88	27	27	27	27	27	27	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	12	10	3	2	4	14	3	4	2	16	13			
3.65	59	59	59	59	59	59	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	28	15	5	2	12	24	5	9	3	2	17			
6.36	99	99	99	99	99	99	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	26	18	11	3	1	12	35	5	5	2	22	17		
1.31	24	24	24	24	24	24	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	48	21	17	5	23	48	4	13	3	6	22	22		
.87	12	12	12	12	12	12	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	15	7	1	1	3	19	2	2	2	11	9			
2.38	47	47	47	47	47	47	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	10	4	2	1	5	8	5	5	1	8	7			
.97	13	13	13	13	13	13	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	6	5	31	1	6	35	1	5	4	14	13		
1.34	40	40	40	40	40	40	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	4	3	4	11	3	15	1	1	1	4	12	10		
.50	3	3	3	3	3	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	2	2	1	2	10	2	1	2	5	5			
3.65	63	63	63	63	63	63	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	45	6	9	3	6	48	4	3	2	1	11	10		
.98	15	15	15	15	15	15	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	36	5	5	...	9	35	...	1	1	1	13	8		
3.21	46	46	46	46	46	46	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	35	8	1	2	4	28	6	5	3	2	13	3		
4.96	76	76	76	76	76	76	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	38	7	2	3	...	8	36	1	2	3	21	19			
2.11	32	32	32	32	32	32	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	32	9	13	20	2	21	41	2	6	6	7	23			
9.64	125	125	125	125	125	125	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	1	1	11	20	5	20	...	2	5	6	13	12			
1.20	20	20	20	20	20	20	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	1	21	31	39	72	30	115	2	2	2	14	37	34		
3.35	48	48	48	48	48	48	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	10	2	4	4	4	12	1	2	1	7	7				
2.17	34	34	34	34	34	34	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	1	5	4	11	26	2	9	24	1	14	12	23	18		
6.43	113	113	113	113	113	113	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	1	24	4	3	3	...	5	26	...	2	1	1	13	11	
1.77	34	34	34	34	34	34	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	40	11	19	39	4	23	63	1	3	20	2	23	23		
5.56	104	104	104	104	104	104	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	2	6	2	11	13	2	18	...	...	6	1	10	10		
2.24	35	35	35	35	35	35	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	2	2	3	6	8	4	14	...	...	...	...	...	...		
8.87	119	119	119	119	119	119	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	89	60	...	...	...	22	80	...	1	46	...	...	...		
5.19	115	115	115	115	115	115	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	72	44	...	...	...	20	65	...	...	31	66	38			
10.28	130	130	130	130	130	130	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	2	1	2	4	12	16	30	51	6	20	66	1	2	27	24
9.07	163	163	163	163	163	163	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	1	34	78	3	6	26	72	2	2	4	15	19	24		
1576	1086	1086	1086	1086	1086	1086	78	78	78	78	78	78	78	78	78	78	78	78	78	78	78	629	183	266	475	23	297	932	35	90	222	...	...	...		
1409	878	878	878	878	878	878	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	8	538	191	255	406	19	251	888	36	58	146	...	...	...	
1576	1409	1409	1409	1409	1409	1409	159	159	159	159	159	159	159	159	159	159	159	159	159	159	159	107	374	521	831	42	578	1820	71	148	368	...	...	...		

\*Average for the quarter.

## MINNESOTA.

MORTALITY IN THE SECOND QUARTER OF 1888 AND 1889, BY MONTHS, QUARTERS AND YEARS

	Year	DEATHS BY MONTHS.						DEATHS BY QUARTERS.					
		January.	February.	March.	April.	May.	June.	First Quarter.			Second Quarter.		
								Total.	Localities Invaded.*	Counties *	Total.	Localities Invaded.*	Counties *
Total from all Causes .....	{ 1888 1217 1220 1378 1226 1281 1098 3815	{ 1889 1137 1128 1199 1066 984 905 3464											
Measles .....	{ 1888 5 9 15 28 56 80 29	{ 1889 23 26 35 17 28 19 89											
Scarlatina .....	{ 1888 11 14 18 5 16 9 43	{ 1889 27 32 26 45 45 29 85											
Croup .....	{ 1888 21 27 24 19 17 9 72	{ 1889 26 27 19 23 13 3 72											
Diphtheria .....	{ 1888 117 73 55 64 47 44 245	{ 1889 78 63 67 77 70 43 208											
Typhoid Fever .....	{ 1888 57 35 36 30 31 27 128	{ 1889 32 27 32 26 22 22 91											
Diarrhoeal Diseases of Children	{ 1888 8 11 5 6 4 19 24	{ 1889 21 14 16 9 26 74 51											
Phthisis .....	{ 1888 100 101 121 100 135 87 322	{ 1889 95 100 102 102 105 81 297											
Bronchitis .....	{ 1888 47 33 56 52 68 35 136	{ 1889 39 58 46 32 21 12 143											
Pneumonia and Pleurisy .....	{ 1888 97 102 117 115 137 74 316	{ 1889 91 144 124 88 62 42 359											

Total for 1888 corrected to May 1, 1889. Total for 1889 corrected up to August 15, 1889.

\* Average for quarter.

*Measles*.—Comparing the returns of deaths in 1888 and 1889 by quarters, it had three times the mortality and distribution in the first quarter, but only half the mortality in the second quarter.

*Scarlatina*.—Three times the mortality distribution in the second quarter of 1889 as for same quarter of 1888. Compared by months the disease appears to be on the decline, the climax having occurred in April and May.

*Croup*.—Mortality in second quarter of 1889 somewhat less than for same last year, but distribution the same.

*Diphtheria*.—Compared by months in 1889, continues to decrease. The mortality during second quarter of 1889 is greater than for same quarter last year, but distribution about the same.

*Typhoid Fever*.—Mortality and distribution less in second quarter of 1889 than in same quarter last year.

*Diarrhoeal Diseases of Children*.—Mortality continues to increase, being greater in 1889 than in 1888 during same period.

*Bronchitis*.—Mortality and distribution much less in 1889 than in 1888, comparing the second quarter.

*Pneumonia and Pleurisy*.—Decrease in mortality and distribution, comparing second quarter of each year.



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VOL. V. NO. 7.

SEPTEMBER, 1889.

WHOLE NO. 55

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF AUGUST, 1889.

### DISEASES OF MEN.

Diphtheria.....	{ cases, 43
	{ deaths, 6
Scarlatina.....	{ cases, 14
	{ deaths, 9

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	23
Reported during the month.....	5
Killed.....	3
Released.....	10
Isolated.....	4

Remaining Sept. 1st, 1889, isolated or not accounted for..... 15

NOTE.—Most of these are cases exposed, and isolated for further observation.

## DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF AUGUST, 1889, AS REPORTED UP TO SEPTEMBER 20:

(Population estimated 1889, cities over 2,000 inhabitants, 539,000; towns and villages, 1,047,860.)

Total number of deaths, 996, an increase of 58 over last month, 582 males, 414 females; 57 per cent occurred in cities over 2,000 population, against 68 per cent last month. Ages, under 1 year, 46 per cent; 1 to 5 years, 11.5 per cent; 5 to 15 years, 6 per cent; 15 to 30 years, 11 per cent; 30 to 50 years, 9.13 per cent; 50 to 70 years, 9.8 per cent; over 70 years, 6 per cent. Of 461 deaths under 1 year old, 54 per cent were in cities; from 1 to 5 years, 59 per cent in cities.

*Measles*.—5 deaths (2 males, 3 females), in 4 localities, 4 counties; 80 per cent occurred in cities. Ages, 2 under 1 year; one 1 to 2 years; two 5 to 10 years. Mortality and distribution one-half compared with last month.

*Scarlatina*.—16 deaths (9 males, 7 females), in 8 localities, 7 counties; 31.25 per cent occurred in cities. Ages, 81.25 per cent under 5 years; 18.75 per cent between 5 and 15 years. Mortality greater; but distribution same as last month.

*Diphtheria*.—27 deaths (12 males, 15 females), in 10 localities, 10 counties; 71 per cent occurred in cities. Ages, under 5 years, 33 per cent; between 5 and 15 years, 59 per cent; an increase in mortality and distribution compared with last month; but about half that of same month last year.

*Croup*.—4 deaths (3 males, 1 female), in 2 localities, 2 counties; 50 per cent in cities. Ages, 75 per cent under 5 years; 25 per cent between 5 and 10 years. Mortality and distribution less than last month, and not half as large as same month last year.

*Typhoid Fever*.—40 death (21 males, 19 females) in 18 localities, 18 counties; 72.5 per cent occurred in cities. Ages, under 10 years, 7.5 per cent; between 10 and 20 years, 60 per cent; between 20 and 40 years, 17 per cent. As expected, approaching fall, mortality and distribution greatly increased compared with last month; but less than for same month last year.

*Diarrhoeal Diseases of Children*.—248 deaths (148 males, 100 females), in 108 localities, 52 counties; 54 per cent occurred in cities. Ages, 79 per cent under 1 year; 15 per cent between 1 and 2 years. Mortality about the same as last month; but distribution much wider. Mortality 100 less than same month last year.

*Bronchitis*.—12 deaths (6 males, 6 females) in 5 localities, 5 counties; 75 per cent occurred in cities. All but one under 5 years old. Mortality and distribution less than last month; but same as corresponding month last year.

*Pneumonia*.—18 deaths (10 males, 8 females), in 6 localities, 6 counties; 88 per cent occurred in cities, 50 per cent under 5 years old. Mortality and distribution less than last month, or in same month last year.

PARTICULAR ATTENTION is asked to the report published regularly on "The distribution and mortality from specified diseases in Minnesota." It is compiled with great care, so as to exhibit the latest reliable information of the character and whereabouts of the diseases against which Boards of Health are bound to wage incessant war.

*Diphtheria* caused greater mortality in August than in July; but less than half the average of other months in 1889.

The greatest mortality in 1887, was in December; in 1888, in October; and in 1889, (to date,) in January.

It seems to be on the decline; but we must not trust appearances, and so long as it exists at all, we must use the means—*isolation* and *disinfection*—which have served so well heretofore.

The Township Boards are doing very well, improving all the time in promptness and thoroughness, and deserve great great credit for their efficiency.

*Diarrhoeal Diseases of Children* is about the same as last month, but lacks 100 of the mortality of August, 1888, though the distribution was greater.

TYPHOID FEVER.—Judging by past experience, we may expect, in August, September and October, a decided increase in the number of cases, and in the mortality, of this dis-

ease. The rain fall has been much below the average, and complaints are coming in that shallow wells, lakes, and the smaller streams are in some cases, dry, and, in very many, afford much less than the usual quantity of water, which is of inferior quality.

These facts have a direct relation to one of the commonest methods of propagating typhoid fever—a *foul water supply*.

Whenever, and wherever, the disease appears, the water supply of the affected family should be immediately examined. If the water has a bad odor, or taste, it should be condemned till the cause is discovered and removed. If, from the surroundings, or the presence of this disease, it is reasonably suspected, examine it as directed in recent numbers of PUBLIC HEALTH, under "Laboratory Notes." But whether the water is examined chemically or not, evident insanitary conditions: "holes-in-the-ground" cess-pools and collections of offensive matters, should be removed and the condition of cellars, and houses investigated. Nothing is more clearly proved than that these things stand very near to the cause of typhoid fever and influence very positively its prevalence, severity and mortality. If they do not exist it rarely occurs, or only in a few isolated cases.

The Plymouth epidemic was caused by the discharges from the sick of typhoid fever getting into a stream used by the population which it decimated. Since Berlin has been thoroughly sewered, and its garbage properly disposed of, this disease, from a common prevalence and large mortality, is among the least as a cause of sickness and death. Let us heed the lesson which common experience teaches, and "clean up" before the fall rains come and increase the danger to our water supplies.

*Disinfect the discharges from the sick before their removal from the sick room, is the rule in the management of this disease—* This is easily done by putting in the vessel, *before use*, a teacupful of solution of chloride of lime, or of caustic lime. This last is the clear solution from whitewash, made of *quick lime*. Put *fresh* quick lime in a wooden pail two or three inches deep, slack it and then fill the pail half full of hot water, (*soft water is best*), cover and let stand till it settles. Put the clear liquid in bottles and cork tightly; label them "*strong lime water*," and set aside in a cool place till needed in the sick room. The lime that remains, mixed with as much more water, may be used as whitewash on cellar walls, or kept in well corked jug will serve for the outdoor earth closet.

VACCINATION—This practice, of common and established use with us, is now undergoing a thorough re-investigation in England, where it originated. The record of Dr. Jenner, who gave a local custom world-wide prevalence, is also under review there, where many seem inclined to judge the practice by their estimate of the doctor. That has nothing to do with the question which is simply, What is vaccination and does it protect from small pox?

It is common experience here and all over the civilized world, that it does protect, and that no other means now known serves the same purpose. It is one of several means, however, it does not replace them but they supplement it. The chief of them are *isolation* and *disinfection*, which are always used together with vaccination, in the control of small pox.

*Compulsory vaccination* has never been made general by law, in this country. It is usually enforced in schools, and indirectly in infected localities, but to make it universal by the enforcement of legal penalties would not be agreeable to an average American community, though it is very common to hear it called for and very urgently, too, by such communities, in the presence of small pox.

Just what is expected from the English commission it is hard to discover, but that good will come, the make-up of the commission justifies us in believing.

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#### LEPROSY.

HERE are abstracts of two articles on this disease, of interest to our readers, which appeared in the *London Lancet*, of August 31, 1889. The first by Dr. Max Sandreczki, Director of the hospital for children at Jerusalem, describes the disease as it is found in Bible lands; the other by H. MacDonald, M. D., Surgeon to the County Leith infirmary, etc., describes a recent personal visit to the Leper hospitals in Norway:

*Leprosy in Palestine.*—"The common variety of the disease in Palestine is the tuberculous, or deforming type, accompanied by anæsthesia or analgesia. There are about 600 lepers in the towns and villages. At Jerusalem they live in a house provided by the city authorities. Anyone showing signs of the disease is immediately excluded from his village, separated from his family, and must go to the nearest town, in order to live on alms, and what his family bring him.

The Moravian Brothers have a large hospital in Jerusalem, intended to contain all the lepers in Palestine, and so extinguish the disease by a process of exclusion and isolation; but as the government (Turkish) will not permit lepers to be shut up, or separate married people, not many patients have gone there. Leprosy is by no means contagious, and so the Moravian project is useless and cruel. If the disease were contagious, the staff of this hospital should suffer; but though men and women there have devoted themselves to



daily contact with lepers, in dressing wounds, washing linen, etc., for the last twenty-five years, not one has suffered any infection or contagion whatever. This result has modified popular opinion, so that lepers are now permitted to enter towns and bazaars, and this practice has not been proved to increase the disease. In Japan lepers are free and the disease is decreasing (Dr. Sissu, physician to the Prince Satsuma, and Prof. Balz, Univ of Tokio). The heredity of the disease is not constant; it may skip a generation, as it does in Palestine. It is confined to the population of the country, and I have never seen a case in Palestine or in Jerusalem in the inhabitants of towns, or in the well-to-do class.

In China, Japan, the Canaries, and Sandwich Islands, the well-to-do have it, and after the Crusades there were lepers among the nobility. Insanitary conditions have most to do with the production of the disease in Palestine, bad air, foul water, rancid and decomposing food, differences between the temperature of night and day, etc.

The discovery of the bacillus of this disease has not advanced the cure, and if it is the cause, how are we to explain the long latency of the disease for years? It only develops, as a rule, at puberty."

*Leprosy in Norway.*—"Dr. Macdonald arrived in Bergen in June last, and reports the nursing inefficient, the wards not over clean, and the patients sad and downcast, due, he thinks, to the large numbers living together. In 1876, 1300 lepers were reported, and the last return shows but 846. There being no isolation laws in Norway, lepers cannot be compelled to go to the hospitals. When they do come they are paid 40 öre (about 11 cents) daily, they supply their own food and are assigned separate apartments, and in Bergen are allowed to work and sell their manufactures in the open market. Dr. Christie, in charge of the Bergen hospital, does not believe in the contagiousness of the disease. At another hospital at Molde, Dr. Kaurin has more pronounced views of the disease than his colleagues further south, and forbids the sale of work. This hospital is reported to be a model in every way. At Trondhjem the management is bad, though the building is fine. The treatment, and semi-isolation, of lepers are successful, and it is only a matter of time when the disease will be almost stamped out. Its main factors (besides heredity) are, filthy habits, bad food, absence of sunlight for many months, foul air in stuffy and smoky cabins, insufficient heat and clothing, and the almost entire absence of green food, or fresh meat. The Storting has been appealed to in vain for more stringent measures. The fish-origin of the disease is not accepted in Norway."

#### DISEASES OF DOMESTIC ANIMALS.

*Diseases of Cattle.*—Of this class *Malignant Catarrh* is probably the most common. It is not well understood, and is often called by other names. To enable Chairmen and members of Boards of Health, as well as intelligent owners of cattle, to have clearer ideas on this important subject, we submit the description given by Prof. Jas. Law, one of the best authorities in this country:

"This appears mainly in cold, damp, marshy situations where the vitality is impaired, or in unusual seasons. In the cold, early summer of 1875, I met with it in cows in several marshy places. Low, damp river-bottoms are most subject to it, and probably it is due to deleterious agents taken in with the food and water as well as to chills and exposure.

*Symptoms.*—A slight diarrhoea may be followed by costiveness, the dung being black, firm and scanty. The hair is rough and erect, shivering ensues, the head is depressed, the roots of the horns and forehead hot, eyes sunken, red, watery, with turbidity in the interior, and intolerance of light, muzzle dry and hot, mouth hot with much saliva, the membranes of mouth, nose and vagina bluish-red, pulse rapid, impulse of heart weak, breathing hurried, cough, urine scanty and high-colored and surface of the body alternately hot and cold. In

twenty-four hours all the symptoms are aggravated, the nose discharges a slimy fluid, the forehead is warmer, and duller on percussion, the mouth covered with dark-red blotches from which the cuticle soon peels off leaving raw sores, appetite is completely lost, dung and urine passed with much pain and straining, and there is general stiffness and indisposition to move. From the fourth to the sixth day ulcers appear on the nose and muzzle, swellings take place beneath the jaws, chest and abdomen, and on the legs, the skin may even slough off in patches, a fetid saliva drivels from the mouth, and a stinking diarrhoea succeeds the costiveness. Death usually ensues from the eighth to the tenth day, preceeded, perhaps, by convulsions, or signs of suffocation. The disease strongly resembles the *Russian Cattle Plague*; but is rarely contagious.

*Treatment.*—Clear out the bowels by a laxative (olive oil and laudanum), following this up by slightly stimulating diuretics (sweet spirits of nitre, liquor of acetate of ammonia,) with antiseptics (chlorate of potassa, bichromate of potassa, hydrochloric acid). Wet cloths may be kept on the head, the mouth and nose sponged with very weak solutions of carbolic acid, and only soft mashies and sliced or pulped roots allowed."

Prof. Law visited on two occasions with the Secretary, herds in which cattle had died of this disease. The characteristic symptoms there "were the ease with which the horns were detached when pulled; the sudden onset of chills, redness of all the mucous membranes, muscular weakness, and death in convulsions." Post mortem examination showed the cause of death to be the inflammatory condition of all the cavities in the nose and frontal bone, which, in rapid cases, were full of a gelatinous pink fluid which, in the bone under the horns was sufficient to detach them, and they came off quite easily. Prof. Law's suggestion as to the probable cause—low pastures on waterlogged soil, with stagnant water to drink—furnishes the key to the disease and suggests the remedy.

*Black Leg.*—As has been repeatedly stated before, in these notes, a great variety of affections are reported under this name. The most common form in Minnesota, has been *black quarter*. It occurs in young and healthy stock probably overfed, and subjected to close confinement with sudden exposure, as going from warm barn to ice-covered pond to drink, for example. It has been rapidly fatal, and the first symptoms have usually been fever, lameness in one leg, hip, or shoulder, extreme tenderness just under the skin, with local swelling. Death usually comes rapidly. The animal is helpless, becomes dull, skin over the swollen part is tense, hard, cold, and insensible, blood often is effused, and the end comes quickly. Post mortem shows the affected part to be distended with gelatinous fluid, more or less bloody, blood is found, semi-fluid and diffused through all the affected tissues. Medicine of little use; but the disease may be fore-fended by reducing the food of the rest of herd, giving bran mashies, linseed oil if the bowels are constipated, fresh cool, not cold, air, and exercise. In both these affections, isolate the sick from the well, look carefully for anything wrong in food, drink, or care, and report the facts through your Local Board of Health.

*Tuberculosis*—(*Consumption, Wasting, Scrofula, Pining.*)—This disease is not only fatal to cattle, as were the other diseases we have referred to, but it is of much greater importance as it affects the milch cow, and its victims are very likely to be sent to the butcher. It is communicable by the milk or flesh of its victims, and so is of the greatest importance as affecting the value and healthfulness of important foods, milk and beef. As to its probable prevalence in this State, we have, as yet, no reliable data, though we shall take steps to that end as soon as possible. Prof. Law telegraphed the writer last winter that in his large experience, he "had seen thirty, fifty, and even eighty per cent in some dairy herds;" and Dr. Salmon, Chief of the Bureau of Animal Industry, replied: "It is generally admitted that milch cows are mostly affected, thoroughbred breeding stock next, and native steers least."

Prof. Law's description of this disease is the most simple and least technical we know, so we quote it:

"This is a specific bacteridian affection, due to a bacillus, and characterized by a specific deposit of cells, large and small, in a special network, but without blood vessels. It is situated by preference in the groups of lymphatic glands, or in the microscopic gland-like tissue of the different organs, and may be seen in all stages, from the simple redness and congestion in which the deposit is only commencing, through the solid grayish tubercle to the soft yellowish cheese-like mass resulting from the softening of the latter. There are also the cavities (*comice*) resulting from their rupture and discharge of the tuberculous matter, and chalky masses from the deposit of earthy salts within them. They may be no larger individually than a millet-seed (miliary tuberculosis), or in the chest of cattle one may measure a foot long and five or six inches in thickness. They are most common in cattle, especially heavy milkers, with long legs, narrow chest, attenuated neck and ears, and horns set near together. Fowls and swine with a corresponding conformation, are next in order of liability, while horses, dogs, and sheep are comparatively exempt. Oft-repeated experiment has shown that tubercle is communicable to healthy animals by inoculation, or by eating the raw, diseased product, and that it is superinduced in any predisposed individual by setting up a local inflammation. It has also been transmitted by the warm, fresh milk; but probably only when the disease has invaded the mammary glands; in many experiments, including those conducted by the author, the milk has proved harmless. Close, badly-aired buildings, (as town cow sheds), are among the most prolific causes of the disease, as are also changes to a colder climate, to a cold, exposed locality, or from a dry to a low, damp, undrained region. Finally, any cause which tends to wear out the general health tends to tuberculosis in a predisposed subject.

"Tubercles may be developed in any part of the body, as the lungs, their serous covering, the membrane supporting the bowels, the coats of the intestines, the throat, the spleen, the liver, the pancreas, the ovaries, the kidneys, the bones, especially the ends of long bones, and in rare cases, the muscles and connective tissue.

"*Symptoms* vary according to the seat of the deposit, yet there is a constitutional condition common to all, and the lungs are almost always involved in the later stages, giving rise to a great similarity of symptoms. The disease may be acute; but is usually chronic. The onset is insidious, and easily overlooked, tubercles being often found in animals killed in prime condition, and I have seen them in *parturition fever*, which is always attributed to plethora. There is some dullness, loss of vivacity, tenderness of the withers, back, and loins, and of the walls of the chest, occasional dryness of the nose, heat of the



horns and ears, want of pliancy in the skin, slightly increased temperature ( $102^{\circ}$ ), weak, accelerated pulse, mawkish breath, stiffness of the limbs, wandering perhaps from one to another, slight, infrequent, dry cough, and blue, watery milk, often abundant but with cheesy matter, fat, and sugar decreased and soda and potassa in excess. The lymphatic glands about the throat are often manifestly enlarged. Swellings of the joints may appear, or a murmur harsher than natural may be heard over the lower end of the windpipe or in the chest. With deposits in the abdomen, and especially in or near the ovaries of cows the desire for the male is often constant (*bullers*), though conception and the completion of gestation are usually impossible. Working oxen are easily overdone, and become visibly emaciated from day to day. As the disease advances the eyes sink in their sockets and lose all animation, the skin is hidebound, harsh, dry, and scurfy, the hair dull, dry and erect, the membranes of the eyes, nose and mouth of a pale, yellow, bloodless aspect, though often streaked with pink vessels, a whitish discharge often takes place from the nose, and with it an increased repulsiveness and often distinct fetor of the breath; if the bowels are involved scouring is common, and if the bones, swelling and lameness increase. Exhaustion with profuse perspiration and labored breathing occur on the slightest exertion, the appetite fails, tympany follows each meal, and the milk is at once poorer and lessened in quantity. The cough increases, becomes rattling, the discharge profuse, fetid, mixed with cheesy-like or chalky particles, crepitating, wheezing, gurgling, and other abnormal noises are heard in the chest, and percussion shows dullness in particular parts with winching. All of the symptoms become steadily aggravated, and the animal usually perishes from the difficulty of respiration or the profuse fetid diarrhoea. In cases affecting the bones, the patient may be unable to stand, and the bony prominences may make their way through the skin or even crumble under the pressure thrown upon them. If the tubercle is deposited in liver, pancreas, or kidneys, there are symptoms of disease of these respective organs.

*Prevention.*—This would include drainage, shelter of pastures by trees, avoidance of changes to cold or damp localities, a warm, sunny location for farm buildings, suitable feeding and watering, the prevention and cure of all debilitating, and especially chronic diseases, protection against overwork, or excessive secretion of milk on a stimulating but insufficiently nutritious diet, securing young, undeveloped animals against breeding and milking at the same time, rejection of tuberculous subjects from breeding, the prompt removal of all such animals from pastures or buildings used for the healthy, and the thorough disinfection of all places where they have been kept.

"The flesh and milk of tuberculous animals are always to be viewed with suspicion; but this poison, like others, can be destroyed by the most thorough cooking."

*Suspected Black Leg in Cattle, and advice as to Management.*—Under date September 9, 1889, Chas. J. Wright, of Fergus Falls, wrote: "There have been three or four cases of 'black leg' among cattle in a big pasture that I have charge of; fatal of course. What is probable cause? Is it contagious to such an extent that Town Board should take any action on it? What can be done to prevent it?" September 11, Secretary replied: "I send you a number of PUBLIC HEALTH, containing a couple of articles on the subject of 'black leg.' I do not believe that true 'black leg' has ever prevailed in Minnesota. It seems rather to me to be a form of what, among men, we know as erysipelas. It takes the form of black quarter, popularly called. I have made several post mortems, and examined into many of these outbreaks, and have had no difficulty in limiting the disease to the few animals first attacked. In no case has it appeared to me contagious. All animals affected should be immediately isolated, given gentle laxatives and succulent food; and if the herd is upon low or suspicious pasturage, it should be removed. In writing to me it would be well to describe your cases in detail, that I may be able to judge as to the character of the disease."

*Hog Cholera in Iowa. Proper action by Local Boards of Health.*—It having been reported to the Secretary that hog cholera existed in Northern



Iowa, he wrote to the State Veterinarian, September 2, 1889, as follows, "Reports have reached me that hog cholera prevails in Northern Iowa. What are the facts and what is the danger of its diffusion this way?" September 4, he replied: "I have no official information as to the prevalence of Hog Cholera in Northern Iowa; but I believe it is present in some localities. The probability always is, that the disease will spread from every centre of infection. It is actively contagious, and you are warranted in trying to prevent its extension through your State." On receipt of this letter the Secretary sent the following circular letter to all the Township Boards on the lower border of our State, and to the Boards of railroad centres where hogs from infected districts were apt to be shipped. "I am officially informed that hog cholera exists in some localities in Northern Iowa. Your Board are requested to keep a sharp lookout for animals coming into your locality from Iowa, isolating any sick or exposed, and reporting immediately to this office."

*Suspicious Disease among Cattle in Preston Lake Tp., Renville Co., found to be Impaction of the Third Stomach.*—September 5, John C. Reibe, C. B. H., telegraphed, "Strange case in herd of cattle here. They droop for a few days, then froth at mouth, and bawling all the while, don't eat nor drink. First cow died this morning; fifteen to twenty affected now. What is to be done. Can't you send State Inspector?" Secretary telegraphed immediately: "Isolate herd. Employ competent veterinarian to examine. Send his report to me." September 6, the following was received: "There is a disease here among a herd of cattle unknown to any one here. There is no veterinarian." Same date the Chairman wrote: "Below find a copy of report of veterinary surgeon, having examined herd of cattle sick. Report:—"Drooping, stupidity; slime running from mouth; legs, first cold, then warm; breathing slightly painful, accompanied by a grunting sound; bowels costive and action painful; expression vacant; animal more or less delirious; extreme weakness; eat poorly; general fever; utters a peculiar bawl or lowing sound. Veterinarian says he was not prepared to give the disease a name or prescribe for it. He would rather the proper State authority give his opinion and prescribe, so hope to hear from you. The cattle are isolated and good care taken. No more have taken down with it since yesterday. One cow, quite wild yesterday, seems to be getting better." September 6, Secretary accompanied by Frank Allen, V. S., of St. Paul, visited the suspected herd, and upon post mortem found impaction of the third stomach as the probable cause of the mortality. Dr. Allen reports as follows:

ST. PAUL, MINN., September 7, 1889.

By request of Dr. Hewitt, Secretary and Executive Officer of the State Board of Health, I accompanied him to Buffalo Lake, to examine a herd of cattle reported to be sick. On arrival we found one beast and one calf aged about four months, dead, and on further investigation another calf dead, and a yearling heifer very sick, and about eighteen or twenty other beasts affected.

The history of the cases appeared on inquiry to be as follows: The herd to the number of about fifty head, are driven to the prairie during the day, and at night confined in a corral. About five or six days ago several were noticed to bedrooping, standing with heads down, ears flapping, constipation, and unwillingness to move or eat. This was followed by a period of excitement, the animal charging at different objects, bellowing and frothing from the mouth and nose, paralysis of hind quarters supervened, and finally death.

The beast was already buried, and the calf had also been buried, with the exception of the omasum (third stomach). This appeared swollen hard, and on section filled with partially absorbed food, principally grass caked into a hard dry mass, which crumbled easily when touched, the leaves of the omasum were congested, and in places the mucous membrane peeled off easily.

The heifer was lying in a shed, and on examination showed the following symptoms: Pulse not noticeable in the radial artery; but the glosso-facial was just perceptible, beating about 60; temperature, 102. Mucous membranes normal; eyes staring, and paralysis of the hind quarters. As the animal was dying, the owner destroyed her, and a post mortem was held. Everything

perfectly normal, except liver slightly anaemic, gall bladder enlarged, and the same appearance in the omasum as was observed in the calf, except the congestion was lacking and the mucous membrane was not readily detached. The animal having been destroyed by a blow on the head, the brain was not in good order for examination; but as far as could be seen, everything was normal. My diagnosis was, "Impaction of the omasum," sometimes called "Haggers," or "Vertigo." This arose from, I believe, two causes: first, the cattle eating indigestible materials, such as the dry autumn grass, old and coarse herbage; and second, from lack of proper water supply. I am further led to my belief from the fact that two or three loads of green corn were hauled to the cattle and greedily eaten; this set up a healthy action of the bowels and those that had only just commenced to droop, quickly recovered. Profs. Williams and Dick, in speaking of this disease, both state that the cerebral disturbance is due to some narcotic principle in the overripe grass, and further that this disease sometimes rages as an enzootic. For the surviving animals a change of diet was ordered, and laxative doses of medicine with proper care as to water.

FRANK ALLEN, D. V. S.

### MAY INSPECTION REPORTS.

ADRIAN (V.) NOBLES CO., DR. C. C. MAY, H. O., JUNE 7, 1889.—In accordance with the requirements of law, I submit the following report as to the sanitary condition of this village. I have made an inspection at several times in the months of April and May, and find as follows:

1. *Privies.* These are as reported last year, simply holes in the ground, and in some places at a dangerously short distance from wells. I again recommend the substitution of earth closets for all of these and have made no orders concerning any of them; but await the action of this Board.

2. A few manure heaps are still in the alleys; but owners are removing them as fast as possible, and I have found it necessary to issue but few orders for removal. The condition in this respect is much better than last year.

3. *The drainage,* natural and artificial, leaves nothing to be desired. But wells, furnishing water for all purposes, are in many instances, as mentioned above, dangerously near to privy vaults; and while it cannot be absolutely proven, it is my opinion the rather large number of cases of typhoid fever which occurred here last autumn, were due to this cause.

4. Last June there occurred two cases of glanders in horses. After examination by a veterinary surgeon, these were condemned and destroyed. Since that time no suspected cases have come to my notice.

A few hogs are kept in the village, but not so located as to be particularly offensive, and as the owners expect to keep them but a few weeks, I have made no orders for removal.

5. Printed notices have been posted forbidding the deposit of manure or garbage inside the village limits. Except in a very few instances I find no evidence that this order has been disregarded, and the garbage has been hauled to the prairie west of town.

6. No epidemic or contagious diseases, excepting the typhoid fever above mentioned, have come to my notice since my last report.

No deaths have occurred in the last eighteen months, excepting one of an infant one day old. In the year 1888, twenty-eight births were reported.

FULDA (V.) MURRAY CO., DR. L. L. REWALT, H. O.—According to provisions of the law we have completed our spring inspection of the village of Fulda, and beg to submit the following report of the sanitary condition of said place:

*Water Supply.*—At present the only water supply is from wells, most of which are only from 12 to 15 feet in depth, and consequently contain nothing but surface or ground water.

*Slaughter Houses.* Are located outside village limits. The blood, entrals and other refuse matter buried.

*Disposal of Garbage.*—The stable manure and other garbage is hauled outside village limits and dumped on open prairie.

*Privies.*—The "hole-in-the-ground" plan is still used. Lime is thrown in by some parties, others clean their privies now and then, while others dig new holes and remove the buildings to them. As our village is not compactly built, so far I do not imagine any evil results.

The season being very dry, we have little or no water in our cellars.

*Contagious Diseases.*—During the past year we had an epidemic of typhoid fever—some 18

or 20 cases—all of which recovered, a few cases of measles, mild form, and 3 cases of scarlatina simplex.

*Nuisances*—The Board has ordered the removal of a number of privies and the vats closed up. Also all the manure piles remaining in town. Found four pig pens within village limits and ordered them removed within 5 days.

OSSEO, (V.) HENNEPIN CO., DR. N. J. PINEAULT, H. O., JUNE 1, 1889.—This is to inform you that the May inspection has been made in this village, the little infection caused by the starch factory being removed, the sanitary conditions of this village are good. Cleaning made thoroughly. This village has been free during the last year of contagious disease.

*Supplementary, June 7, 1889*—The starch factory was considered as a nuisance by the fact that its refuses and dirty water were left stagnant to rot; considerable putrid exhalation came from that sort and were considered by this Local Board of Health as dangerous to public health. The Board ordered the proper remedy, and to-day there is no cause for complaint.

PAYNESVILLE, (V.) STEARNS CO., DR. W. H. HENDERSON, H. O., MAY 30, 1889. — Village located on north branch of Crow River. Advantages for drainage good, and availed of far as necessary. Manure heaps removed, only the accumulations of two or three weeks remaining at present. Streets and back yards well cleaned. A few of the "hole-in-the-ground" privies still remain unattended to. Wells are mostly drive-wells. Only one butcher shop in corporation, which is cleanly kept; slaughter-house half a mile beyond corporation. No pigs kept in corporation this year so far. No stockyards, creameries or dairies. School house, hotels and boarding houses and surroundings in good, sanitary condition. Livery stable cleanly kept; all manure, etc., removed. No stagnant pools or marshy land in the corporation.

### SANITARY QUESTIONS AND ANSWERS.

*The new law concerning payment of necessary expenses of Local Boards in dealing with infectious diseases.*—The attention of Local Boards of Health is called to Chap. 148, General Laws of 1889, providing for the payment of necessary expenses in dealing with infectious diseases. Under this law all such expenses, when approved by the County Commissioner of the District in which they were incurred, will be paid by the county. (For copy of above law see PUBLIC HEALTH, page 11, Vol. V.) In the newspaper supplement, it was called Chap. 196; but in the bound volume of laws, it is Chap. 148.

*How to deal with a nuisance found on private property.*—August 13, 1889, complaint was made of the carcass of a horse on the farm adjoining the complainant's, and near his wheat field. His men refuse to cut the grain in the vicinity of the carcass, and he says that the nuisance must be removed or he must lose his grain; and that he cannot afford to go to law. August 16, the Secretary wrote to the Chairman: "The inclosed copy of a communication W. H. Hounsel explains itself. I inclose a marked copy of the law, (Chap. 132, of 1883,) which defines the duties of your Board in the matter. I trust that you will see that it is immediately complied with if the circumstances are as Mr. Hounsel states. Under Sec. 6, your Board order a "nuisance, source of filth, or cause of sickness," found on private property to be removed within 24 hours at the owner's expense. If he fails to comply with the order, he is liable to the penalty prescribed by the same section of the law; and the Board must see that the nuisance is removed at the expense of the owner or occupant, or person having caused or permitted the same.

### LABORATORY NOTES.

THE SANITARY EXAMINATION OF WATER FOR THE USE OF HEALTH OFFICERS. (Continued from August number.)

*Nitrates.*—It is difficult to suggest any qualitative method which is not open to objection. The one known as "*Horsley's test*," is approved by good authority; but you must be sure the sulphuric acid used is *free from nitric acid*, which in our experience, even "C. P." samples often contain. The test prescribed in the U. S. Pharmacopœia, for nitric acid in sulphuric acid, will settle the question, and should always be used. If you find a sample which is free,



get a pound and reserve it for chemical use, saving this trouble of frequent test. "If there be carefully poured upon some of the acid in a test tube, a layer of "freshly prepared solution of Ferrous sulphate, (one part of selected, clear "crystals of sulphate of iron dissolved in ten parts of distilled water,) no "brownish, or redish, zone should appear at the line of contact of the two "(nitric acid)."

The reaction is quite delicate and all test tubes or other vessels used, should be *clean*. Here is the test as proposed by Dr. Bond, of Gloucester, England: "Put 20 minims of pure sulphuric acid into a very small test tube, then add 10 minims of the water to be examined, and afterwards drop in carefully, 1 drop of a solution of pyrogallie acid (10 grains to 1 ounce water, to which add 2 drops sulphuric acid. Photographers use it). A pink zone, or sometimes a delicate blue zone, changing into a dark amythest tint, and from that into a brown tint, indicates nitrates.

Still another qualitative test much used and very handy, is with *Brucine*. It may be used with the unconcentrated water, in this way: Put a drop of sulphuric acid into a large drop of the water on a white porcelain surface, and let fall into the mixture the least crystal of brucine; if nitric acid is present, a pink color will mark the contact, and will spread; after a time it becomes yellow. Or, concentrate a teaspoonful of the water in an evaporating dish, or cup plate, over an alcohol flame till it just dries up; then wet the residue with sulphuric acid, a drop or two, tilting the dish till it reaches all the deposit. Drop in a crystal of Brucine, and if nitrates are present, the colors as above will appear. Dr. Parkes states that 0.01 grs. per gallon is easily detected in this way.

(TO BE CONTINUED.)

—C. N. H.

#### WATER ANALYSES IN AUGUST.

*Warren*, artesian well; private, one sample; *Austin*, river (Cedar), one sample; wells, private, four samples; artesian well, public supply, one sample. *Red Wing*, artesian wells, private, five samples. Total, artesian wells, seven; wells, four; river, one sample. The following is a report of these analyses:

Results expressed in parts per 100,000. Multiplied by 0.584 gives grains per American gallon; alkalinity in terms of calcium carbonate.

SOURCE	SOLIDS		Nitrites	Nitrates	Chlorine	Oxygen used	Ammonia		Total Hardness	Alkalinity
	Total	Volatile					Free	Alb.		
Warren, artesian, priv.	605.0	37.0	None	None	325.	.3986	.3180	.....	112.	12.0
Austin, Cedar river ...	18.0	2.0	None	None	.25	.1920	.0080	.0104	16.5	18.0
" well back of stock yard.....	34.0	9.0	Slight Trace	Slight Trace	3.60	.0240	.0080	.0010	23.0	15.0
Austin, well in stock yard.....	55.0	15.0	.0025	Trace	3.50	.1488	.1140	.0022	39.0	34.0
Austin, city well, artesian.....	*25.0	4.0	None	None	.45	.0000	.0084	.0000	23.0	25.0
Austin, well, private..	13.5	5.0	Slight	Trace	1.20	.1680	.0040	.0040	7.0	2.0
" ..	25.0	8.0	Slight	Trace	3.50	.1440	.0010	.0106	11.0	3.0
Red Wing, artesian, R. R. well.....	†46.0	.....	.....	.....	10.50	.....	.....	.....	27.0	25.0
Red Wing, artesian, private.....	‡35.4	.....	.005	None	4.20	.0144	.0440	.0000	28.0	30.0
Red Wing, artesian, private.....	§39.0	.....	.002	None	9.20	.0192	.0170	.0000	23.2	24.0
Red Wing, artesian, (being dug).....	*30.4	.....	.000	Slight Trace	1.40	.4128	.0002	.0083	23.0	26.0
Red Wing, artesian, (same as last) .....	40.0	11.0	None	None	2.20	.6024	.0020	.0190	26.0	26.0

Solid residues, \* Soluble, 6.5; insoluble, 18.5. † Soluble, 21.8; insoluble, 24.2. ‡ Soluble, 15.8; insoluble, 19.6. § Soluble, 21.8, insoluble, 17.2. ¶ Soluble, 13.6; insoluble, 16.8.



# PUBLIC HEALTH IN MINNESOTA.

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VOL. V. NO. 8.

OCTOBER, 1889.

WHOLE NO. 56

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF SEPTEMBER, 1889.

### DISEASES OF MEN.

Diphtheria.....	}	cases, 38
		deaths, 15
Scarlatina.....	}	cases, 18
		deaths, 0

### DISEASES OF ANIMALS.

Cases of glands remaining isolated or not accounted for.....	15
Reported during the month.....	12
Killed.....	5
Released.....	5
Isolated.....	5

Remaining Oct. 1st, 1889, isolated or not accounted for..... 17

NOTE.—Most of these are cases exposed, and isolated for further observation.

## DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF SEPTEMBER, 1889, AS REPORTED UP TO OCTOBER 20:

(Population estimated 1889, cities over 2,000 inhabitants, 539,000; towns and villages, 1,047,860.)

Total number of deaths, 913, 83 less than last month; 499 males, 414 females; 56.3 per cent occurred in cities over 2,000 population. Ages, under 1 year, 40.85 per cent; 1 to 5 years, 15.33 per cent; 5 to 15 years, 6.02 per cent; 15 to 30 years, 12.6 per cent; 30 to 50 years, 9.96 per cent; 50 to 70 years, 8.21 per cent; over 70 years, 6.57 per cent. Of 373 deaths under 1 year, 55.76 per cent were in cities; from 1 to 5 years, 53.56 per cent were in cities.

*Measles*.—No deaths from this disease reported.

*Scarlatina*.—11 deaths (7 males, 4 females), in 8 localities, 8 counties; 63 per cent occurred in cities. Ages, 2 under 1 year; 6 between 1 and 5 years; 3 between 5 and 10 years. Mortality less than last month, but distribution the same. Much greater than for same month last year.

*Diphtheria*.—30 deaths (15 males, 15 females), in 15 localities, 13 counties; 60 per cent occurred in cities. Ages, under 5 years, 46 per cent; between 5 and 10 years, 33 per cent; 10 to 30, 20 per cent. A slight increase in mortality and distribution compared with last month, but less than one-half compared with same month last year.

*Croup*.—9 deaths (5 males, 4 females), in 6 localities, 6 counties; 55 per

cent occurred in cities. Ages, 66 per cent under 5 years; 33 per cent between 5 and 10 years. An increase in mortality and distribution compared with last month, but less than for same month last year.

*Typhoid Fever.*—57 deaths (40 males, 17 females), in 20 localities, 20 counties; 77.2 per cent occurred in cities. Ages, under 10 years, 7 per cent; between 10 and 20 years, 12.26 per cent; between 20 and 40 years, 66 per cent. A continued increase, as expected, in mortality and distribution, but much less than for same month last year.

*Diarrhæal Diseases of Children.*—164 deaths (82 males, 82 females) in 80 localities, 46 counties; 49.39 per cent occurred in cities. Ages, under 1 year, 72.56 per cent; between 1 and 5 years, 27.44 per cent. A decided decrease in mortality and distribution compared with last month, and same month last year.

*Bronchitis.*—15 deaths (6 males, 9 females), in 7 localities, 7 counties; 60 per cent occurred in cities. Ages, under 5 years, 86 per cent. A slight increase in mortality and distribution compared with last month, but less than for same month last year.

*Pneumonia.*—17 deaths (9 males, 8 females), in 7 counties, 7 localities, 82 per cent occurred in cities; 82 per cent under 5 years. Mortality about same, but distribution slightly less than last month, and much less than for same month last year.

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AT a meeting of the State Board of Health, held in St. Paul, September 19, 1889, Dr. Hewitt, the Secretary, was granted a leave of absence for five months. This time he will spend in Europe, making a study of the practical questions of sewerage and disposal of garbage in the cities and towns, vaccine cultivation, etc., and in the celebrated laboratories, chemical and bacteriological, of the Old World. Dr. Franklin Staples, of Winona, was appointed Acting Secretary during Dr. Hewitt's absence. All correspondence should be addressed to the Board at Red Wing, where the work will be carried on as heretofore, under the direction of Dr. Staples. The Laboratory of the Board will be closed for the winter, so that no analyses will be made there during that time.

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SUSPECTED SMALL POX PROVES TO BE A CASE OF ERYTHEMA.—September 3, 1889, Dr. Robbins, H. O. of Wykoff, reported the case to Dr. Phillips, member State Board of Health at Preston, as one of suspected small pox, reported to him, attended by Dr. McTenberg. Dr. Phillips referred Dr. Robbins' letter to the Secretary, who immediately, on receipt of it, telegraphed to Dr. Phillips, to go and see the case at once, and sent him two crusts of humanized virus. This the doctor did, September 5, and reported September 7: "I visited the case and found a severe case of erythema. There was nothing in it that looked like small pox, and how Dr. McTenberg made his diagnosis is a mystery to me. I found that the town board, however, had isolated the family,

but it was too late if the disease had been there. I am very glad that it was a false alarm. If anything of a like nature occurs again, I shall take the liberty of investigating before informing you."

LEPROSY IN MINNESOTA, OCTOBER 10, 1889.—At the request of the Secretary, Dr. Gronvold, formerly a member of the State Board of Health, and its standing committee on leprosy, has furnished a resume of the cases in Minnesota, at that date, as far as known to him, which we print below:

	NAME	SEX	Age in 1889	How long Leper	How long in Am'rica	Form of Disease	CHILDREN
1	O. H.	Male	73 yrs.	16 yrs.	23 yrs.	Anaesth.	Many, all well
2	E. A.	"	35 "	13 "	26 "	Tubercular	Unmarried
3	J. S.	"	59 "	20 "	15 "	Anaesth.	No ch'd'n living
4	T. N.	"	41 "	22 "	18 "	Anaesth.	Children, well
5	N. B.	"	40 "	11 "	10 "	Anaesth.	Unmarried
6	H. L.	"	Prob'ly about 70 yrs.	More than 22 years	22 "	Anaesth.	No ch'd'n living
7	C. K.	"	47 "	17 yrs.	17 "	Tubercular	

Of these, the three first named of whom I have heard recently, do not seem to be much effected. The fourth has been reported last year to be quite well. The fifth worse, but contemplated going back to the old country, after what last heard from him. The sixth and seventh are probably comparatively well, and the disease does not seem to have made any progress lately, according to last returns. No. 6 was, two years ago, reported as suffering from Atrophies, contractures and anaesthesias as usual in chronic cases.

IN the matter of the railroad stock yards at Austin, Minn., complained of to the State Board of Health, by the Local Board of Health, their committee appointed to investigate and act in the case, report as follows:

STATE BOARD OF HEALTH AND VITAL STATISTICS,  
Office of Secretary and Executive Officer, }  
RED WING, August 13, 1889.

To the State Board of Health of Minnesota:

Your committee, to whom was referred the complaint of the Local Board of Health of the city of Austin, against the Chicago, St. Paul & Kansas City Railway, in the matter of the location and management of the stock yards of said railroad in said city, after an elaborate correspondence between the Secretary of this Board and said Local Board, have to report that the Secretary arranged for a conference between said Local Board, this committee and the general superintendent of said railroad.

Said conference took place in Austin, August 6, 1889, present, this committee for the State Board of Health, the Local Board of Health of Austin, with the city attorney and a consulting attorney, Mr. French, with the superintendent (Mr. Shields) of the C., St. P. & K. C. Ry.

It is proper to state that before said meeting the stock yards were personally examined by all the parties above mentioned and found to be in prime order, having very recently been thoroughly cleansed. After a good many rambling statements, the Secretary of the State Board submitted an agreement which,

after full discussion by all concerned, was put into writing and accepted as the result of the meeting, a copy of which is hereto annexed.

As the Board will see the railway concede all that could be demanded of them and the Local Board obtain all that they asked with the exception that the stock yards be permitted to remain where they are if it shall be found that they are no longer a "nuisance, source of filth or cause of sickness." Any further difficulty arising will be reported to your Secretary, for the information of the Board. All of which, with the correspondence, is respectfully submitted.

CHARLES N. HEWITT, M. D.,

J. H. PHILLIPS, M. D.,

Committee.

#### AGREEMENT.

AUSTIN, August 6, 1889.

At a meeting of the committee appointed by the State Board of Health, in conjunction with the Local Board of Health of this city, and with the general superintendent of the Chicago, St. Paul & Kansas City Railway Co., it was determined that the stock yard of the company at this city remain for the present where they are, provided that the company shall make an impervious covering of the ground, so arranged as to drain to the center or the side of the railway, and that said yards be kept in good sanitary condition by the regular removal of solid accumulations to a dumping ground approved by the Local Board of Health and under its direction. That for the purpose of carrying off the fluid accumulations and washings from said stock yards, a covered sewer be constructed on the railway side of the yard to the river, the city water supply to be laid on, and water therefrom be used for flushing under the direction of the Local Board of Health.

#### DIPHTHERIA.

THE following abstracts from the studies of the Vital Statistics of Diphtheria, in our State, for 1887, 1888 and 1889 justify the importance assigned to this dreaded disease in the following circular, to which the serious attention of Boards of Health and heads of families is urgently called.

DEATHS FROM DIPHTHERIA FOR 1887, 1888, AND 1889 (8 MONTHS), SHOWING TOTAL, SEX, PARENT NATIVITY, AND AGES.

Year	Total	SEX		PARENT NATIVITY						AGES—PER CENT OF TOTALS									
		Males	Females	Both American	Both Foreign	American Father	Foreign Mother	Foreign Father	American Mother	Unknown	Under 1 year	1 to 2 years	2 to 3 years	3 to 4 years	4 to 5 years	5 to 10 years	10 to 15 years	15 to 20 years	20 to 30 years
1887	788	383	405	155	489	16	74	54	5.7	6.7	8.2	9.8	9.1	39.5	35.	13.8	3.2	3.2	
1888	854	423	431	173	539	46	58	38	4.21	9.37	11.24	11.94	9.84	46.6	34.67	13.34	3.28	1.64	
1889*	449	211	238	110	260	13	47	18	5.12	8.68	10.68	12.9	12.9	50.28	32.6	10.46	5.79	2.	

\* Eight months.



DEATHS FROM DIPHTHERIA IN 1887, 1888 AND 1889 (8 MONTHS), BY MONTHS.  
PER CENT OF TOTAL DEATHS FROM THIS CAUSE, 1887-88.

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1887. ....	7.59	6.18	3.6	3.	4.51	7.98	4.38	8.11	10.68	12.32	12.74	17.5
1888. ....	13.7	8.54	6.44	7.49	5.5	5.14	6.08	6.9	8.08	11.71	10.3	10.07
1889 <sup>2</sup> (Totals) ....	78	63	67	77	70	43	21	30	.....	.....	.....	.....

\* The results for this year will be changed somewhat by the final returns. Percentage cannot be figured, as the year is only partially complete.

That the mortality is less at date than ever before since (probable) 1867, is ground for encouragement and faith in the sanitary measures which have so largely aided our success.

The disease is one of childhood and youth. The per cent of its mortality to the number attacked varies exceedingly- In one family but a single victim; in another all children taken, and even the mother added to the list. Our records contain some pitiful evidence of these facts. One attack does not forebode another as does that of some infectious diseases, and the peculiar infection of Diphtheria seems more resistant to disinfection than any other animal poisons.

During the years 1887, 1888 and 1889 there has been no epidemic prevalence of Diphtheria, though at times it has threatened. Our escape was largely due to the prompt use of preventive measures by the majority of the Local Boards, and to the increasing co-operation of the heads of infected families. *The most frequent failure has been in careless or imperfect disinfection of persons, clothing, bedding, rooms and houses, and lax isolation of the sick.* But few public funerals have been reported, though an evasion of the law has occasionally been permitted by timid authorities. That such laxity is wholly wrong needs no proof. The experience of the years past confirm the wisdom of strict enforcement of isolation, disinfection, private burial, and the oversight of the Public Schools as possible means of distributing infection.

We ask, for the future, of *Local Boards of Health*, increased vigilance and vigor. Inform the people by distributing this circular, by notice of the occurrence of the disease in your district, and by the strict enforcement of the law; of *Chairman of Local Boards and Health Officers*, prompt notification of the disease to the Secretary of the State Board, fuller records of each outbreak, and that they set the example of cheerful and prompt compliance with sanitary law; of *heads of families and all citizens* we ask a hearty obedience to the law and a cordial support of their Local Board, and of this Board. Apply to either for any information or assistance they can give.

It remains only to state the known facts and to give the rules which experience has taught for the special prevention and control of Diphtheria, *it being understood that the general rules for prevention and control apply to all infectious diseases.*

DIPHTHERIA IS AN INFECTIOUS DISEASE, and is, at times, one of the most malignant and obstinate of its class. The mildest case may communicate a most virulent and fatal variety of the infection to another child. *It attacks, almost exclusively, children from one to fifteen years of age.* Diphtheritic Croup so nearly resembles the ordinary kinds (simple membranous, and spas-

modic, or false croup), that when diphtheria, is known to be in the family or neighborhood, all forms of croup should be dealt with as infectious.

It is now well ascertained that the disease has a *specific cause*, which is probably generated in the peculiar exudation (white patches).

*The common and visible forms of untidiness and filth are not primary causes of this disease, but are powerful helps to the violence and fatality of its attack.* These are uncleanness of person, clothing and habits, dirty and close bed rooms, closets, living rooms, or kitchens, and the like. Outside the house they include tainted well, or cistern water, and an insufficient or soiled public water supply, foul sewers or drains, "hole in the ground privies," and cess pools. All these should be constantly under careful oversight, and particularly when Diphtheria prevails. *This poison may be conveyed in milk, and, probably, in other food; by the person, or clothing, of a healthy man, woman or child, (coming from exposure to any one having the disease); by pet animals and toys, and by the bodies of the dead.*

HOW LONG AFTER EXPOSURE DOES THE DISEASE OCCUR? The average of Minnesota experience puts it at from a few hours, to four or five days. In other States it is extended to a limit of two weeks. The rule of practice should, therefore, be: *After exposure to Diphtheria, isolate for at least a week as a precaution, with disinfection of clothing.*

HOW LONG AFTER EXPOSURE BEFORE THE PATIENT MAY ASSOCIATE WITH THE WELL, AND THE LATTER INCUR NO RISK? Certainty impossible, but never until all evidence of disease of throat, nose or lungs has disappeared, and the body, including hair and scalp, has been repeatedly washed with hot soapsuds. *Three weeks is probably the minimum of time; four or five are often needed.*

ISOLATION FOR THE PREVENTION, OR CONTROL OF DIPHTHERIA, IS THE FIRST AND MOST IMPORTANT MEANS.

This must include all reasonably suspected of the disease, as well as those in whom it has appeared, but always separate the sick from the suspected, as the last, after a week, may, fortunately, prove to be unaffected, and should then be released. The exception to this rule, will, of course, be the well who must attend the sick. They should be isolated as if themselves sick.

THE PLACE FOR ISOLATION. Beyond all question, if practicable, a comfortable special public retreat. The time will come, when in this country, as in England, there will be a popular as well as professional, demand for it. It has not yet come, nor will it come, till Local Boards build such an institution of a character to win the confidence of those who need it most—large families in small houses, in one or two rooms, in the country, away from medical or neighborly assistance and like families in the crowded tenement houses of our cities. These are they who have to fight Diphtheria at fearful odds, and with a very large mortality.

In the absence of a proper public refuge it is very difficult to provide for the poor, and for large families in small houses, during cold weather, but during warm weather the *Tent Hospital is within the means of Local Boards, and of most families*, and perfectly meets the necessities of the case. Plans and estimates have been made by the Secretary of the State Board who will furnish them on application. Isolation in houses having upper rooms available, may be very successful if the room is cleared of superfluous things, carpets, extra clothing, bedding, or other things likely to harbor infection), and has a good *independent* ventilation, with abundant sunlight, and is cared for with scrupulous care. The association of the well with the sick must be limited to the nurse, and she to be held to be infected, as respects the well members of the family.

DISINFECTION IS OF TWO KINDS—First, that available during sickness; second, that to be used after recovery or death. In the sick room it must be limited to the discharges of the sick. Those from the nose and mouth should be collected on pieces of old and soft cotton, or linen rags, and immediately

burned. If this is not readily done, keep a tin fruit can two-thirds full of a saturated solution of Chloride of Lime, in which such rags can be soaked till it is convenient to burn or bury them in the ground. The frequent change of underclothing and bedding is of material use. All such things as can be washed, should be plunged into boiling water and the boiler, covered again, boiled briskly for ten minutes, when all infection will have been destroyed and the things may be washed as usual. The discharges from the bowels are easily disinfected and deodorized, if a half teacup of the saturated solution of Chloride of Lime is put into the vessel before use. After use the contents should be buried in the earth and vessel rinsed with boiling water. Fumigation of the sick room, while occupied, with burning sulphur, carbolic acid, sugar, or other deodorant is useless for the destruction of infection.

DISINFECTION AFTER THE RECOVERY, OR DEATH, OF THE SICK. As infected clothing, bedding, and the like, are the most frequent carriers of contagion, in this disease, this form of disinfection is of the utmost importance. *Boiling water is speedily fatal to the virus of diphtheria*, therefore where possible, it is the easiest and best means for that purpose, used as above described for clothing.

Straw ticks should be opened, the straw burned, and the ticks, if worth the trouble, may be washed as above. Feather beds are very difficult to disinfect by other means than superheated steam, and should not be used for the sick of infectious disease unless with the intention to burn them afterwards. The same is true of feather pillows. For things which cannot be treated with boiling water the only other method is by sulphur fumigation. Hair mattresses must be thoroughly opened, and everything to be fumigated so arranged as to be reached, throughout, by the fumes. Hang upon lines when possible. Next close all windows and other openings as tightly as you can, leaving only the door through which you are to go from the room. Set a washtub, containing boiling water to the depth of two or three inches in the middle of the floor; put in two or three bricks, upon which place a shallow iron dish containing broken roll sulphur, at least a pound for every one thousand cubic feet of air space in the room. Two or three tubs arranged as directed are better, the object being to *saturate* the air with moisture loaded with sulphurous acid in solution. When all is ready stir into the sulphur a half teacup of alcohol, light it and go out closing the door tightly behind you. After at least six hours open doors and windows till all odors have gone, then hang bedding, carpets and the like out of doors, and wash furniture, floors, and all wood work with hot soap suds. The walls and ceiling to be white-washed with *fresh* quick lime. All having been cleaned leave windows open for a week, at least, before you occupy the room. In winter keep a brisk fire burning for that time. So treated such rooms may be occupied by adults—but *avoid their use by children for at least three months. If they must use it repeat the fumigation beforehand.*

DISPOSAL OF THE DEAD FROM DIPHTHERIA. As already stated, the dead body can and often does, communicate the disease, not only when handled, or touched, as in kissing, but in other ways distributes the poison of the disease. Immediately after death the body should be wrapped in a sheet saturated with the chloride of lime mentioned above, and put into a tight coffin. Burial should be immediate as possible, and private. Public funerals are positively forbidden by law, (Sec. 28, Chap. 132, Laws 1883). This section will be strictly enforced by Local Boards of Health and by Health Officers. No excuse will be accepted for neglect of this necessary penalties, and precaution will be strictly enforced.

#### SANITARY QUESTIONS AND ANSWERS.

*Rendering lard and tallow at home by a butcher—Complaint by his neighbor.*—September 29, the following was received from an Acting Health Officer: "There are two families occupying different rooms in the same house



here. One is a butcher and he tries out his lard and tallow in his part of the house. The tallow consists of all that is saved from butchering, and cooking it makes a very offensive smell, in fact sickening, and the other occupants have complained and asked the Board of Health to stop the rendering. What can we do?" September 23 the Secretary replied: "Rendering is an offensive trade and cannot be carried on in a private house, or any other place, without the permission of the Local Board of Health (see Sec. 2, Chap. 222, laws of 1885). I do not know that the smell in this case is unhealthy, but it may be. It is anyway a nuisance, and comes under the terms of the law."

*Should a family where case of typhoid fever exists be quarantined?*—Under date September 30, an Acting Health Officer reported: "Have a case of typhoid fever. Have quarantined the house, but people pay no attention to it." October 2, Secretary replied: "The enclosed copy of circular will explain the method of dealing with a case of typhoid fever. The patient should be isolated in a clean, welllighted and ventilated room, and great care taken to thoroughly disinfect all discharges as per inclosed circular. The danger of infection from typhoid fever is through the discharges of the patient. The family need not be quarantined if the patient and his room are kept clean, all clothing worn by him to be washed in boiling water as soon as removed; all his discharges regularly disinfected before leaving the room, and buried in the soil, *not put in privies or cesspools*. Always look after the water supply in case of typhoid fever."

#### MAY SANITARY INSPECTION REPORTS.

[T. C., abbreviation for Town Clerk; C. B. H., for Chairman Board of Health; H. O., Health Officer; L. B. of H., for Local Board of Health.]

MORTON, (V.) RENVILLE CO., DR. R. D. ZIMBECK, H. O., MAY 31, 1889.—According to the requirements of the law. I have carefully inspected the village of Morton, during this month, and would report as follows: The sanitary condition is good. Owing to the early spring and favorable weather the spring cleaning has been well done. While making the inspection the "Earth Closet" circulars were distributed and explained, also a copy of the Health Code for the village of Morton was left at each house. During the past year there has been but little sickness in the village. There were no contagious diseases during the year except a few cases of measles this spring. The water supply is from wells. The water is good, and found at a depth of twenty to forty feet, in a bed of gravel which underlies the town. A meat inspector will be appointed soon. We are waiting for the village council to fill a vacancy in the Board of Health before appointing an inspector.

WHEATON, (V.) TRAVERSE CO., DR. C. A. LAMPANIUS, H. O., MAY 31, 1889.—Have made the annual spring inspection, and find everything in good sanitary condition. Residents have been ready to assist and promote sanitary regulations, with a few exceptions. As far as I am aware of, no epidemic diseases exist, which is congratulating to this place.

BUCKMAN TP., MORRISON CO. A. B. SKINNER, C. B. H., JUNE 1, 1889.—This is to certify that we have made the annual inspection of the town of Buckman, and find said town free from all infectious diseases of every nature.

AUDUBON (V.) BECKER CO., T. W. DUNLAP, ACTING H. O., JUNE 8, 1889.—The annual inspection for this year, made May 17 to 31, is still marked with greater improvement. No ponds of water are standing, all grass sloughs have been ditched, and the dry weather has helped a good deal. The public school building, railroad station, and village jail are all in good condition. There were some delinquents in regard to removing manure piles, but notices were served, when neglected, and in every case they were removed. Considerable ditching, filling up of ponds, and grading has been done, which has shown its benefits. We have had several cases of scarlet fever, but in a mild form, and no deaths have occurred.



# PUBLIC HEALTH IN MINNESOTA.

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AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD. RED WING. MINN.

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VOL. V. NO. 9.                      NOVEMBER, 1889.                      WHOLE NO. 57

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF OCTOBER, 1889.  
DISEASES OF MEN.

Diphtheria.....	}	cases, 86
		deaths, 24
Scarlatina.....	}	cases, 31
		deaths, 1

DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	17
Reported during the month.....	1
Killed.....	3
Released.....	5
Isolated.....	1

Remaining Nov. 1st, 1889, isolated or not accounted for..... 10  
NOTE.—Most of these are cases exposed, and isolated for further observation.

DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA,  
FOR THE MONTH OF OCTOBER, 1889, REPORTED UP TO NOVEMBER 20.

(Population, 1889, estimated, cities over 2,000 inhabitants, 539,000; towns and villages, 1,017,860.)

Total number of deaths, 832, against 913 last month; 450 males, 382 females; 43.27 occurred in towns, 46.73 in cities over 2,000 population. Ages, under 1 year, 27.76 per cent; 1 to 5 years, 12.02 per cent; 5 to 15 years, 9.73 per cent; 15 to 30 years, 13.22 per cent; 30 to 50 years, 12.62 per cent; 50 to 70 years, 13.82 per cent; over 70 years, 8.41 per cent.

*Measles*—Only 2 deaths from this cause reported—one in a township, the other in a city. From this and other reports it is evident that there is little of this disease in the State at the present time.

*Scarlatina*—8 deaths (1 male, 7 females), in 4 localities, 4 counties; 62.50 per cent occurred in cities. Ages, 6 under 5 years, 2 between 5 and 10 years. Mortality and distribution less than last month, but the same as the corresponding month last year. This disease has probably reached its minimum, coming down from its wide spread distribution during the late spring and early summer. Very little of it is reported from other sources.

*Diphtheria*—83 deaths (49 males, 34 females), in 24 localities, 23 counties; 53.01 occurred in cities of over 2,000 inhabitants. Ages, under 5 years, 50 per cent; between 5 and 15 years, 50 per cent. A decided increase in mortality and distribution compared with last month, but less than for the same month last year. As happened in 1887 and 1888, this disease begins its ascent during

the fall and reaches its climax in the early winter. This climax occurred in December of 1887, and January of 1888. Reports from other sources show this disease to be on the increase.

*Croup*—25 deaths (14 males, 11 females), in 10 localities, 10 counties; 76 per cent occurred in cities of over 2,000 inhabitants. Ages, under 5 years, 76 per cent; between 5 and 15 years, 24 per cent. Corresponding with diphtheria this disease has made a decided increase since last month, when there were only 9 deaths reported from this cause, but the mortality is less than for same month last year.

*Typhoid Fever*—62 deaths (43 males, 19 females), in 30 localities, 27 counties; 63 per cent occurred in cities. Ages, between 5 and 15 years, 9 per cent; 15 to 30 years, 47 per cent; 30 to 50 years, 30 per cent; 50 to 60 years, 8 per cent. A slight increase compared with last month, but less than one-half compared with same month last year. During this month of 1887 and 1888, this disease reached its climax and as the number of deaths in the same month of 1889 is much less than for either of the other years, it is evident that the mortality has not been as great.

*Diarrhæal Diseases of Children*—63 deaths (27 males, 36 females), in 29 localities, 23 counties; 52 per cent occurred in cities. Ages, under 1 year, 86 per cent; between 1 and 3 years, 14 per cent. Less than half the mortality compared with last month, and not as great as for the corresponding month of 1888.

*Bronchitis*—12 deaths (7 males, 5 females), in 6 localities, 6 counties; 66 per cent occurred in cities. Ages, under 5 years, 75 per cent; between 50 and 70 years, 25 per cent. A slight decrease in mortality compared with last month.

*Pneumonia*—29 deaths (16 males, 13 females), in 14 localities, 14 counties; 65 per cent occurred in cities. Ages, under 1 year, 34 per cent; between 50 and 70 years, 34 per cent. An increase compared with last month, but much less than for same month last year.

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IN our last issue we noticed the fact that Dr. Hewitt, Secretary of the State Board had departed on a five months' leave of absence to be spent in Europe, and that during that time the laboratory of the Board would be closed and no analyses made. During the past month we have received several samples of water for analysis notwithstanding the notice as above.

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WE receive each month copies of PUBLIC HEALTH returned by the Postmasters as "Refused," which in every case is by a Chairman of a Township Board. From one Chairman in particular we received a card written in the Norwegian language, in which he expressed himself very forcibly that he could not pay for the journal and he did not want to read anything he could not pay for. To prevent any misunder-

standing in the future we will explain the matter. The journal is issued monthly from the office of the Board at Red Wing. It is intended as a convenient means of communication with the 1500 Boards which now exist in this state. It is sent to every Local Board through their Health Officer or Chairman *free of charge* and is *the property of the Board*, not of any individual member. It should be read and then carefully filed for future reference, for many times in our correspondence we are saved labor by referring to past issues of the journal.

Should the journal not be received regularly each month please notify this office of the fact and we will endeavor to have the matter remedied.

IN our circulars upon diphtheria and other infectious diseases we have repeatedly advised the removal of well children, of families where these diseases exist, to families where there are no children to protect them, if possible, from infection. And while advising such removal, we have advised against their return to their family, too soon after the disease has disappeared and cleansing and disinfection has been completed. In many cases it has happened that such children have escaped the disease until returned to their home which was thought to be safe by cleansing, etc., only to become infected. To illustrate this, the Health Officer of Chatfield, November 5, reported a family infected with scarlatina, and when the first case appeared, a well child was sent away from home. He remained away and well for more than four weeks, and then returned, and in eight days was down with the disease. The premises were considered safe by disinfection, etc.

DIPHTHERITIC CASES TRAVELING ON RAILROAD TRAINS.—During the past month there have been reported two instances where persons from outside the State arrived at their destination in this State, sick with diphtheria. One case reported from Princeton, by the Health Officer, was from Dakota; the other case, reported by the Health Officer of Aitkin, was a lady from Michigan. Before leaving home she occupied the same bed with two young ladies, members of the family, who had had diphtheria some six months before. She took the train October 30; was taken ill October 31; stopped off at Brainerd November 1, and staid over night. While there she consulted a physician, who did not consider her case one of diphtheria. Arrived in Aitkin November 2, consulted another physician who pronounced it a mild case of diphtheria, and the necessary precautions were taken to prevent spread of the infection.

**W**ATER POLLUTION BY REFUSE FROM STARCH FACTORIES.—October 19, the Chairman of the Local Board of Health, Sunrise Tp., Chisago county, complained to this Board that the waters of Sunrise River and Goose Creek (two streams in his town), were becoming fouled by the refuse from the potato starch factories located in the villages of Harris and North Branch, Chisago county. He claims that these factories together use 10,000 bushels of potatoes daily, and that the washings, etc., from them has rendered the water of the above streams unfit for use by man or domestic animals, and that fish die in the waters. This complaint was referred to the respective Boards of Health of Harris and North Branch, two incorporated villages. The Health Officer of Harris reported that the refuse from the factory colored the water but little, and that cattle drink the water and eat the refuse. That only five families live on the creek below the factory, and they all have good wells. That he has lived on the creek for fifteen years and never knew of any fish in it, except a few suckers in high water.

The Health Officer of North Branch, on Sunrise River, reported that the refuse is simply ground potatoes, and that if cattle eat the whole potatoes, they will eat them ground. He admits unpleasant taste for domestic use. Only seven or eight families below the factory use the water, and they only for stock.

Both set forth the financial benefit of these starch factories to farmers in the vicinity, as they furnish a ready market for potatoes, and on that account are loath to interfere in the matter. Cold weather will necessitate suspending operations for this season, and further action in the case has been deferred.

#### *DISEASES OF DOMESTIC ANIMALS.*

**S**USPECTED "MALADIE DU COIT" IN HORSES IN OLNSTED AND FILLMORE COUNTIES, MINNESOTA.—October 7, 1889, Geo. Logan, Chairman Board of Health, of Pleasant Grove Tp., Olmsted County, reported to this Board: "I wish to know if the contagious disease called clap, in horses, comes under the control of the State Board of Health. Complaint was made to me to-day by a neighbor who has one mare which he says cannot live; also David Overud, one of my neighbors, lost both mare and colt. It is given by stallions to mares and vice versa. These cases I personally know.—Please tell me what answer to make to such complaints and who has charge of the same. The horse that first started the disease is owned by Mr. Hutton of Fillmore Co." Oct. 12, Secretary replied: "'Maladie du Coit' in horses is a contagious disease, and animals afflicted should, under no conditions, be used for breeding purposes. I advise your Board to have an examination made by a competent Veterinary Surgeon. In what locality is the case in Fillmore county owned?" Oct. 31, Mr. Logan wrote: "I did not reply immediately to yours of the 12th. inst. for this reason. Geo. Dumford, the complainant, I told to have his mare examined. He took her to Dr. Ormond, V. S., who said that if the animal was afflicted, the case was not far enough advanced to decide and he could do nothing but take his mare home and await developments. Concerning the other case, contracted from the Fillmore county horse, and owned by Mr. Overud, Mr. O. told me this morning that his was a clear case and he thought it had better be stopped at once." The Secretary, on receipt of this, requested F. Allen, D. V. S.



of St. Paul to thoroughly investigate the matter and report. This he did and reported as follows:—

ST. PAUL, MINN., Nov. 11, 1889.

*The Secretary State Board of Health, Red Wing:*

In reply to yours of Nov. 6, 1889, requesting me to at once make a thorough investigation into the suspected out-break of "Maladie du Coit" in Olmsted County. I left St. Paul by the 3 o'clock train to Winona on the 7th inst., I called on Dr. Staples as requested and he told me if necessary to go to Jordan. I arrived in Rochester on Thursday evening, and on Friday morning, I hired a team and drove to Pleasant Grove, 12 or 14 miles from Rochester, and gave my letter of introduction to Mr. Geo. Logan, chairman of the Local Board. He referred me to Mr. Overud, the man who had lost a mare and colt who told me the following history: In the spring of '88 there was a Bayshire Stallion owned by Mr. Hutton who covered his mare and several others around, and in the spring of '89, she colted with the colt dead, three or four months after being covered she began to run blood from her vulva, and this changed to pus with an extremely offensive odor, she had partial paralysis of the hind quarters and after the colt was born, she, according to his description, wasted away behind and died. This description was exceedingly meagre and unsatisfactory. He told me other mares covered by the same horse in the neighborhood were diseased. I made a list of the owners and drove around to see them, I examined in all about 30 mares including a number belonging to Mr. Hutton, the owner of the horse.

A black mare belonging to Geo. Dumford, covered in April by a black stallion owned by J. Lamb, (this horse was suspected of being diseased) was said to be dying, I examined her and found her right in every particular. A grey mare owned by S. J. Smith was covered by Hutton's horse in April or May and in two weeks she was reported to have broken out round the vulva and anus, they were recommended to use blue ointment (mercurial ointment) by Hutton's son; they did this and the mare when I examined her was perfectly sound. Every mare that was reported sick or suspicious I examined, and found them sound in every case.

Hutton's horse was (I was told) badly diseased, it was too far to get that night so I put up and drove there Saturday morning. I examined the horse thoroughly and found him perfectly sound and clean, and with no signs whatever of disease.

I am convinced that Overud's mare died of something entirely different from the disease in question, but the description I got was meagre and as the mare had been dead six months or more, I could not come to any conclusion. I think the paralysis was due to pressure by the uterus or rather weight of the uterus on the nerves and vessels of the hind extremity. Two colts were reported dead, but I fully believe they died from other causes as the mares were all right.

I was told that Hutton's horse had been dressed and medicine got for him from Spring Valley. This was also mercurial ointment, and the cause of his wounds were scratches made in covering a mare, and while in this state he covered a mare who was dirty having only foaled three days before, this caused the wounds to fester, but on my examination sores were completely healed.

FRANK ALLEN, D. V. S.

*Hog Cholera in Minnesota.*—Cases of this disease have been reported from the towns of Newburgh, Fillmore Co., and Martin, Rock Co. Both towns immediately adjoining Iowa. Further reports from Newburgh are, that no new cases have occurred. The Chairman of Martin Tp. reports that necessary precautions have been taken with success. One herd is now well. The first case occurred the latter part of September.

**LUNA AND LUNACY.—THE INFLUENCES OF THE VARIOUS SEASONS ON MINDS DISEASED.**—The old idea that Luna and Lunacy have an intimate relation, appears to be not wholly without foundation. This, at any rate, is demonstrated by the commissioners in lunacy at Scotland—that the seasons have a distinct influence on asylum statistics. The tables of admissions during the years 1880–7 show that there are two well marked periods—one in which the number rises considerably above the average, and the other in which it falls considerably below. The average monthly number for the eight years was 1,699. During the three months of May, June and July the number was 628 above what it would have been if the average number only had been admitted. On the other hand, during the months of October, November, December and January the number was 462 below what it would have been if the average number had been admitted. The table shows further that this rise and fall are preceded by a gradual rise and a gradual fall, the rise taking place during February, March and April, and the fall taking place during July, August and September.

“The special frequency,” the commissioners say, “with which asylum treatment is resorted to during the period from the middle of April to the middle of July corresponds with what has been observed by asylum physicians—that there is a tendency to an exacerbation of the mental disorder of patients in asylums during the early part of summer; and it is interesting to notice also that the statistics of suicide in the general population show that this occurs most frequently during the same period.”

The greatest number of recoveries take place during June, July and August, and they are fewest during the months of November, January and February. The regularity in the rise and fall of the numbers is twice interrupted. The rise is interrupted by a fall in April, and the fall is interrupted by a rise in December. “It is considered probable that these interruptions are due to some causes which recur regularly at these periods, because they are well marked in character; and it is suggested that the December rise is occasioned, in part at least, by the annual statutory revision of the condition of patients in asylums during that month. This revision is made by medical officers of asylums with a view to determine whether they can properly give the certificate of the necessity for further detention in the asylum which is annually required to legalize the continued residence of all patients who have been three years in an asylum. The occurrence of the large number of recoveries during the months of June, July and August is probably due to the large number of admissions during May, June and July, as more than 48 per cent. of all the recoveries which take place during the first year of residence occur within three months of the date of admission.”—*Pall Mall Gazette*.

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**INFECTION AND FREE LIBRARIES.**—The progress which has already been made in establishing and maintaining free libraries in many of our cities is doubtless owing in large measure to the facilities afforded by the lending department. Any failure of activity here would certainly lessen public interest in the work as a whole, and would effectually cripple its utility. It is therefore most necessary to note and correct in time the occurrence of any circumstance

which appears to have this tendency. To one such we would now, though not for the first time, direct attention. This is the conveyance of infectious disease by means of circulating volumes. That such disease can be so conveyed is beyond all question, and this fact has lately been impressed upon newspaper readers by the recital of illustrative cases coming under the actual observation of medical men. We have no need to seek far for evidence to prove that in the present condition of public enlightenment it would be worse than folly to rely upon the forethought of casual readers for any sufficient safeguard against the danger in question. It is obvious that, if any real good is to be done, the library committees must legislate on their own behalf. A set of rules dealing specially with this subject ought to be embodied in the code of every such institution. The circulation of books in any infected family would of course be prohibited, and in the event of contagious disease appearing after a book had been borrowed, the latter should at once be disinfected before being again placed in circulation. More stringent measures would necessarily be applied to the case of persons borrowing from the library while themselves infected or living in an atmosphere of infection. Permission to obtain any book should be withheld for a sufficient time. The disinfection, or better still, if possible, the substitution of a new volume for one already taken out, should be insisted on, and any repetition of the first offence be held to justify exclusion from the benefits of the library, for a considerable period. The work of disinfection would probably be most efficiently done if carried out by the library authorities, of course at the cost of the borrower. Subject to such variations of detail as might be required, the adoption of a series of regulation such as the above would go far to secure the free libraries against a real and dangerous check upon their useful work. Some similar arrangement might also be advisable in the case of libraries generally.—*The London Lancet*.

**LAW AND HEALTH.**—Many people object to laws calculated to govern their customs and manner of living be they conducive to good health or otherwise. The sentiment of personal liberty so far outweighs the higher demands of civil liberty in their minds that they are blinded to the public good, and are devoted to personal comfort and selfish ends. They protest against almost all agencies that are established in the interest of public health. They oppose inspection, isolation, notification, disinfection, and other means for the promotion of health demanded by sanitation. These persons feel that they have been outraged whenever the law has compelled them to comply with the demands of sanitation. The fact that these laws have been enacted proves that some compulsion was necessary to enforce such rules and regulations as have been promulgated by sanitary science.

It must be remembered that no law was ever enacted to suit the pleasure of the individual. All laws are enacted for the common good of the people they govern. Individual interest, profit and pleasure must give way to the public welfare, and there is no greater public interest than that of health. The individual must comply with its laws, and thus contribute to the general progress of hygiene.

The general experience is that, in cases of epidemics, the most strict enforcements of the laws is demanded. Isolation and quarantine are submitted to



and insisted on. There is no opposition to the laws governing communities in this regard. Yet the greatest number of deaths and the greatest amount of sickness are not due to epidemics. To the constant, silent progress of insidious diseases which are considered wholly preventable, we find the greatest sacrifices of human life and health. The fatality of an epidemic is plainly observable and its scourge impels men to resort to any preventive measures known. The laws governing health departments and creating their powers are demanded to be strictly enforced. But everywhere disease, not in an epidemic form, is carrying off more victims and endangering more lives than epidemics do. The conclusion is that all laws, creating health departments and defining their powers, should be strictly enforced at all times. An unsanitary state in any community continually produces sickness, and at all times presents the condition necessary to produce epidemics.—*The Sanitary News*.

**A** SAFE CORDIAL.—The Rhode Island State Board of Health Bulletin says: No one who, fatigued by over-exertion of body and mind, has ever experienced the reviving influence of a tumbler of milk, heated as warm as it can be sipped, and with or without a teaspoonful of sugar, will willingly forego a resort to it. The promptness with which its cordial influence is felt is indeed surprising. Some portion seems to be digested and appropriated almost immediately, and many who now fancy they need alcoholic stimulants when exhausted by fatigue will find in this simple draught an equivalent that will be abundantly satisfying, and far more enduring in its effects.

#### SANITARY QUESTIONS AND ANSWERS.

*Have Health Officers instructions to visit and examine patients of physicians with reference to quarantine?*—Oct. 14, a physician wrote: Has the President of a Local Board of Health any instructions regarding the examination of patients of other physicians, with reference to quarantine or release from quarantine? Must he personally inspect cases of contagious diseases or is it sufficient for the attending physician to make a written report of such cases? Oct. 18, the acting Secretary replied. "Your communication to the Secretary of the State Board of Health asking whether the Presidents of Local Boards of Health have instructions to visit and examine the patients of other physicians with reference to quarantine, has been received at the office of the Board and referred to me as acting Secretary (Dr. Hewitt being absent on a journey to Europe). We have to answer your communication as follows: Sec. 18. of Chap. 132, Genl. Laws of 1883 provides as follows: "It shall be the duty of all Local Boards of Health, whenever they are informed that there is a case of small pox, scarlet fever, diphtheria or other infectious or contagious disease within the territory over which it has jurisdiction, to immediately examine into the facts of the case, and, if the case appears to be of the character above specified, they shall adopt such quarantine and sanitary measures, etc." It is our opinion, that when a case of disease is reported in due form and as required by law, as one of infectious or contagious disease by a reliable physician who is in attendance upon the case, this should be taken by the local health officer as sufficient and lawful evidence in the case. This has been my own practice under the law as local health officer for several years."



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
 SECRETARY'S OFFICE, RED WING, NOV. 15, 1889.

Quarterly Supplement to Report on Vital Statistics, }  
 Third Quarter, 1889.

NOTE.—In the following table of death causes.

**Puerperal Diseases** includes *Puerperal Fever*, and *puerperal septicaemia*.

**Diarrhoeal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of  
 over five years of age.

**Diarrhoeal Diseases of Children** includes intestinal diseases, under 5 years  
 during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicaemia*, *Pyæmia* and *Phagedaenia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tubes*  
*Mesenterica*, *Hydrocephalus*, and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we  
 have been unable to classify.

**Not Classified** includes deaths from certain specified causes, not included in the  
 report following.

See page 48 for comments concerning mortality from certain diseases.

MONTHLY STATEMENT OF BIRTHS—THIRD QUARTER  
 OF 1889.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT QUARTER FILED IN THE  
 OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO  
 NOVEMBER 15, 1889).

GRAND TOTAL, 5763.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN
SEX.	Males .....	50.76	5763	2923	.....	.....
	Females.....	48.77	.....	.....	2813	.....
	Unknown .....	.47	.....	.....	.....	27
COLOR.	White.....	99.95	5765	2925	2812	27
	Colored.....	.02	1	1	.....	.....
	Unknown .....	.03	2	1	1	.....
CONDI- TION.	Legitimate.....	99.36	5731	2917	2787	27
	Illegitimate.....	.64	37	11	26	.....
	Unknown .....	.....	.....	.....	.....	.....
NO. AT BIRTH.	Single .....	97.85	5642	2866	2751	25
	Twins .....	2.15	126	62	62	2
	Triplets .....	.....	.....	.....	.....	.....
	Unknown .....	.....	.....	.....	.....	.....
PARENT NATIVITY.	Both American.....	27.96	1613	823	785	5
	Both Foreign.....	53.80	3103	1589	1496	18
	Am'n Father—Foreign Mother...	5.36	309	155	153	1
	Foreign Father—Am'n Mother...	11.10	610	316	322	2
	Unknown .....	1.78	103	45	57	1



# DEATHS—FOR THE THIRD QUARTER OF 1889.

47

OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO NOVEMBER 15TH, 1889).

SEX.	SOCIAL STATE.		AGE.												NATIVITY.				PARENT NATIVITY.																		
	Males.	Females.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.	Other Minnesota.	Other U. S.	Foreign.	Unknown.	Both American.	Both Foreign.	American Father.	Foreign Mother.	Foreign Father.	American Mother.	Unknown.	*Localities Invaded	*Counties.	
11		11					5		1																												
12		12					1		1																												
27		27					2		7																												
20		20					2		3																												
46		46					1		5																												
46		46					1		2																												
17		17					2		4																												
8		8					1		3																												
9		9					7		1																												
15		15					12		2																												
73		53	17	1	2	1			1																												
46		23	20	3					1																												
9		2	6	1																																	
10		5	5																																		
35		31	1																																		
20		20	9	1	8	3	2	1	3	2	1	3	1	1																							
32		17	10	5			8	3	2	1	3	3	1	1																							
48		418					318	89	6	2	1																										
331		331					248	64	11	3	2	3																									
6		6	4	2																																	
9		4	4	1																																	
56		56					45	4	5	1	1																										
50		50					39	4	3	1																											
95		92	25	7	1	31	11	3																													
52		40	9	2	1	18	4	4	2	3																											
30		3	21	6																																	
30		2	23	5																																	
127		55	33	8	2	3																															
50		50	66	8	3		1																														
22		17	5				10	2	3	2																											
18		14	4				5	2	1																												
2		14	28	10																																	
36		9	17	8	2	1																															
18		15	3				7	6																													
26		25	1				14	5	3	1	1																										
40		30	10				19	5	1																												
29		21	5	3			11	5	1																												
12		9	18	1	1	4																															
77		77					77																														
50		50					50																														
34		34					34																														
20		20					20																														
111		8	57	44	2																																
78		1	31	46																																	

\*Average for the quarter

## MINNESOTA.

MORTALITY IN THE THIRD QUARTER OF 1888 AND 1889, BY MONTHS, QUARTERS AND YEARS

	DEATHS BY MONTHS.				DEATHS BY QUARTERS.								
	Year.	July.	August.	September.	First Quarter.			Second Quarter.			Third Quarter.		
					Total.	Localities Invaded.*	Counties.*	Total.	Localities Invaded.*	Counties.*	Total.	Localities Invaded.*	Counties.*
Total from all Causes .....	{ 1888 1221 1407 1334 3815	{ 1889 1053 1071 947 3464						3605 2985			3962 3071		
Measles .....	{ 1888 18 12 3 29	{ 1889 13 8 2 89			7 5 114 21 16 33 8 7								
Scarlatina .....	{ 1888 6 7 3 43	{ 1889 17 18 12 85			20 6 7 30 9 6 16 4 4								
Diphtheria .....	{ 1888 52 59 69 245	{ 1889 24 34 34 208			40 27 155 25 19 180 29 23								
Croup .....	{ 1888 9 11 13 72	{ 1889 9 7 9 72			17 13 45 11 10 33 10 9								
Typhoid Fever .....	{ 1888 25 53 98 128	{ 1889 16 43 60 91			21 18 88 17 16 176 23 19								
Diarrhoeal Diseases of Children .....	{ 1888 235 364 236 24	{ 1889 275 290 184 51			4 4 29 7 7 836 69 44								
Phthisis .....	{ 1888 101 127 102 322	{ 1889 84 64 77 297			63 39 322 65 40 330 65 41								
Bronchitis .....	{ 1888 29 12 20 136	{ 1889 19 12 13 143			26 22 155 20 17 61 9 8								
Pneumonia and Pleurisy .....	{ 1888 26 35 51 316	{ 1889 28 23 18 359			54 33 326 51 35 112 22 22								

Total for 1888 corrected to May 1, 1889. Total for 1889 corrected to November 15, 1889.  
 \* Average for quarter.

*Measles*.—Mortality and distribution compared with first and second quarters of 1889, is much less, and is also less than for same quarter of 1888. The mortality in September, 1889, was the lowest yet recorded.

*Scarlatina*.—Mortality much less than in previous quarter of 1889, by three times as great as for same quarter last year.

*Diphtheria*.—Compared by months in this quarter is on increase, but is much less than for same months last year, and only about half that of corresponding quarter of 1888, and of second quarter of 1889.

*Croup*.—A continued decrease compared by quarters, and less than same quarter of 1888.

*Typhoid Fever*.—A decided increase, as expected, compared with previous quarters of this year, but less than for same quarter last year.

*Diarrhoeal Diseases of Children*.—A decided increase during the summer months. Mortality less, but distribution greater than for same quarter last year.

*Bronchitis*.—Continues to decline.

*Pneumonia*.—A marked decrease compared with previous quarters of this year, and mortality about half compared with same quarter last year.



# PUBLIC HEALTH IN MINNESOTA.

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VOL. V. NO. 10.

DECEMBER, 1889.

WHOLE NO. 58

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF NOVEMBER, 1889.

### DISEASES OF MEN.

Diphtheria.....	{ cases, 165
	{ deaths, 42
Scarlatina.....	{ cases, 39
	{ deaths, 5

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	10
Reported during the month.....	8
Killed.....	6
Released.....	1
Isolated.....	3

Remaining Dec. 1st, 1889, isolated or not accounted for..... 11

NOTE.—Most of these are cases exposed, and isolated for further observation.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA  
FOR THE MONTH OF NOVEMBER, 1889, REPORTED UP TO DECEMBER 20.  
(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)

Total number of deaths, 798, against 832 last month; 456 males, 342 females; 41.73 per cent occurred in towns, 58.27 per cent occurred in cities over 2,000 population. Ages, under 1 year, 26.31 per cent; 1 to 5 years, 13.40 per cent; 5 to 15 years, 9.89 per cent; 15 to 30 years, 15.91 per cent; 30 to 50 years, 12.26 per cent; 50 to 70 years, 13.53 per cent; over 70 years, 8.77 per cent.

*Measles*--5 deaths (2 males, 3 females), in 4 localities, 4 counties. Ages, all under 5 years. An increase over last month, but the mortality from this cause is very low.

*Scarlatina*--10 deaths (6 males, 4 females), in 8 localities, 8 counties; 50 per cent occurred in cities over 2,000 inhabitants. Ages, under 5 years, 70 per cent; between 5 and 10 years, 30 per cent. A slight increase compared with last month, and distribution twice as great, but not one-half compared with the same month last year.

*Diphtheria*--73 deaths (37 males, 36 females), in 25 localities, 22 counties; 51.44 per cent occurred in cities over 2,000 inhabitants. Ages, under 5 years, 47.3 per cent; between 5 and 15 years, 42 per cent. Mortality less than last month but distribution the same. Mortality and distribution much less than for corresponding month last year.

*Croup*—24 deaths (11 males, 13 females), in 10 localities, 10 counties; 66 per cent occurred in cities over 2,000 inhabitants. Ages, under 5 years, 90 per cent; between 5 and 10 years, 10 per cent. Mortality and distribution same as last month, and the corresponding month last year.

*Typhoid Fever*—59 deaths (34 males, 25 females), in 24 localities, 24 counties; 71 per cent occurred in cities over 2,000 inhabitants. Ages, under 5 years, 6.77 per cent; 5 to 15 years, 6.77 per cent; between 15 and 30 years, 52.54 per cent; between 30 and 50 years, 27 per cent. Mortality and distribution less than last month, and for the same month last year.

*Diarrhoeal diseases of children*—16 deaths (12 males, 4 females), in 11 localities, 10 counties; 56.2 per cent occurred in cities over 2,000 inhabitants. Ages, all under 3 years. Mortality and distribution much less than last month.

*Bronchitis*—18 deaths (12 males, 6 females), in 8 localities, 8 counties; 78 per cent occurred in cities. Ages, 88 per cent under 2 years. A slight increase in mortality compared with last month.

*Pneumonia*—45 deaths (28 males, 17 females), in 24 localities, 23 counties; 57 per cent occurred in cities. Ages, 49 per cent under 5 years; between 15 and 30 years, 24 per cent; between 30 and 50 years, 11 per cent; between 50 and 70 years, 15 per cent. A decided increase compared with last month.

AS has been customary at this time of the year, when lumbering firms are arranging their logging camps for the winter, this Board has issued to all such firms, a circular letter calling their attention to the necessity of knowing that the men they employ this winter are thoroughly protected by vaccination against small pox. A copy of this letter will be found on page 104.

DURING the past month there have been several outbreaks of diphtheria where the disease has existed for some time, but was not reported to this office until it had alarmed the Board and citizens, and we were appealed to for assistance. In one town especially the disease has existed since last August, unreported to this Board until November 18. This is all wrong, as Sec. 18, Chap. 132, general laws of 1883, requires that it shall be the duty of all Local Boards of Health whenever they are informed of a case of infectious disease, to immediately examine into the facts, take action to prevent the spread of the infection, and *immediately* report the disease and the measures adopted for its control to this office. It is in the interest of localities that these *immediate* reports are required, as this Board is often able to render advice and assistance to Local Boards in dealing with an outbreak of this character.

A VERY UNPROFITABLE CONTRACT.—The Health Officer of Brainerd recently reported to this office, a case which turned out as follows: "We have been having trouble here for the past year by unknown parties tearing down our "Infectious Disease" signs. I have always had the police instructed to watch them but heretofore they have been unsuccessful. In this case a policeman happened to be watching another party, and was concealed by a high board fence. He overheard a conversation between a man and woman relative to the card, the woman finally agreeing to give the man fifty cents if he would tear it down. He did so and then the policeman appeared on the scene. Tableaux—Injured innocence, etc. Nevertheless the police judge fined them \$10 and \$5 respectively."

This offense has frequently been reported to this office by Local Boards, but this is the first time that the perpetrators have been reported as so summarily dealt with. The above may be a warning to future would-be violators, and serve as a precedent to other Boards in prosecuting such offenders.

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CORRESPONDENCE OF THE SECRETARY.

LETTER NO. 1.

BELFAST, Ireland, Saturday, Nov. 23, 1889.

CIRCUMSTANCES beyond my control prevented my attendance on the meetings of the American Public Health Association in Brooklyn. Nor was I able, before sailing, to get an abstract of the proceedings.

I was able to visit some localities in which sanitary work of interest to us was going on and will devote this letter to what I there saw.

The town of East Orange, N. J., (population not far from 20,000) in 1886 adopted the small pipe system of sewerage with works for the chemical treatment of the sewage, disposing of the fluid product by intermittent downward filtration, the solid matter "sludge," was at first sold to farmers, then given away and is now disposed of by burial on the poor-farm, farmers not having yet learned its value as a fertilizer. The works cover about eighteen acres of what was before a swamp and pond draining a thickly settled district having no sewers and fouled by much manufacturing waste. The land cost \$20,000. The water course was straightened and graded so as to drain the swamp and pond and the whole field was underdrained with tile besides.

The chemicals in use are sulphate of alumina (common alum) and milk of lime (white wash) in saturated solution. These are added separately to the sewage as it enters the works in an irregular brick channel called the "salmon ladder," where the current is so delayed and broken up as to secure their thorough admixture with the sewage on its way to the covered settling basins.

There are two of these for alternate use, and each is divided into three

tanks by two cross walls. Slowly filling and overflowing these tanks, the precipitated matters settle to the bottom, and the clarified sewage flows up into an open channel outside the building, where it is delivered into lateral ditches over the surface of the field. The clarified outflow is delivered by the subsoil drains into the stream. The precipitate in the tanks is lifted by vacuum pumps to the forcing reservoirs in the machine house, and thence into a mechanical filter press which expels a part of the water and delivers the "sludge," in the shape of hugh pan-cakes, in which form it is used as a fertilizer. I saw some of it. It was about the consistence of brick freshly moulded, dark color and slight ammoniacal odor. I thought it likely to be more odorous if long kept. The superintendent said it was promptly disposed of. I was told that three crops of coarse grass had been taken from the soil, and found that a portion of the discharges from the works was being filtered through gravel, coke, and other material in the field.

The patent is an English one, in use in Coventry, which I shall inquire about when I visit that city. Taken altogether, I found that the English engines, imported for use, were a failure, as are the American ones now in use, and another change is proposed. The expense (apparently) of skilled supervision, induced the local authorities to employ their own superintendent, and it was claimed by some that the lack of complete success was chiefly due to this cause.

My examination was, of course, brief, and I saw only the superintendent at the works, and the constructing engineer's assistant in Newark; but I saw enough to discover that this method of disposal of sewage is still an experiment. The buildings are very handsome and must have been costly. The machinery, except the boiler, is English, and cost \$7,500. The first boiler was an upright and a failure. A new one is now in use.

The original pumps failed and have been replaced, and other changes are proposed. The whole irrigation plant cost \$60,000. The published report states that the largest quantity of chemicals used has been eight grains of lime and ten grains of alum to the gallon. The dry weather flow of sewage for 15,000 people is stated at 500,000 gallons, requiring 744 pounds of alum and 571 pounds of lime daily, mixed with 3,000 gallons of water, the cost of which, mixed, pumped, and delivered, is about \$5.00 a week. Wages, I think, about \$10.00 a day. After seeing the system in Coventry, I shall visit the Orange works on my return, and will report further.

With Dr. James, the genial Superintendent of the New York City Board of Health, I visited their vaccination station, the isolation hospital, and the new plant of the Vivartas system of cremating garbage and refuse on the garbage dock, whence garbage is now taken out to sea in great scows. This plant is the result of several expensive trials, and though not quite ready for work, the arrangement struck me very favorably. It will be in full blast when I return, and I shall give it a thorough examination. I had no idea what a miscellaneous mass garbage is. In the method here used, the cremation of the garbage is the last step in dealing with it, and the ashes from 100 tons is hardly enough to fill a wheel-barrow. The carts dump the garbage and refuse into a chute which delivers them onto an endless apron, like the straw carrier of a thresh-



ing machine. The garbage is thus spread out in a thin layer, from which the tin cans, iron scraps of all sorts, glass, crockery, bricks, stones, umbrellas, white and brown paper, etc., etc., are picked off by hand; then passing over a screen the finer ashes, sand and the like are shaken out. From the screen the garbage falls into a tank of water, in which a current is kept up carrying the garbage to two elevators, one above the other. All the green stuff and such matter as will float, drifts into the upper elevator and goes directly to the crematory, while heavy stuff sinks, and, caught by the lower elevator, is carried up and sorted over for coal, etc. The quantity of all these matters saved is wonderful. I saw barrels and bales being carted away, and the amount of coal saved runs up into tons in a day's work of 100 tons. I shall be able to give very interesting data when I see it in full operation. I have many notes, but better wait till sufficient *actual trial* proves what it can do.

The Willard Parker Hospital for infectious diseases is one of the best specimens of its class, built several years ago. There were very few patients there but very fine facilities for their use when needed—if for diphtheria alone a noble charity. The surgeon in charge has used intubation over one hundred times with over twenty per cent of success and a great relief in nearly all cases, and believes it will to skilfull hands nearly always replace tracheotomy. He stated that it was not difficult to perform. I was greatly pleased with his statement and shall collect all the data I can abroad.

After a stormy passage we arrived at Londonderry early Wednesday morning, November 20. The trip up Lock Foyle on the tender in the early morning was delightful—a very bright new moon, a very brilliant morning star and the brightening sky fore-running the sun gave light for our first view of foreign soil and scenery, novelty and oddity all around us. But I must not take up this space with other than sanitary topics, though if I do get a little off the professional track, occasionally, I am sure I shall be excused.

I find a curious state of affairs in sanitary matters in Belfast, and hope to succeed in getting an intelligent account of the sanitary management of this bustling Irish city, for PUBLIC HEALTH.

C. N. H.

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LETTER NO. 2.

KENSINGTON HOUSE,  
KNOCK, COUNTY DOWN, IRELAND, }  
Tuesday, November 26, 1889. }

Since my last I have been trying to get some knowledge of the sanitary management of Belfast and of this portion of Ireland, but I meet with considerable difficulty due to the admixture of poor law administration, medical charities and what we know as sanitary work. The medical man, who serves in some sense as what we call Health Officer, is simply the advisor of the health committee of the city council. The dispensary physician, employed by the poor law-guardians, are the active health officers in city and country, standing in some relation to the sanitary administration which I cannot yet clearly define.

I was referred by the clerk of the Health Committee to Dr. Woodhouse, medical inspector of the Local Government Board of Ireland, whose duties

keep him pretty constantly on the move, but he was able to give me a couple of hours to-day. We had a very pleasant interview. I was sorry to find that there is not much printed matter other than the public health act relating to details of administration. I find that the Local Government Board stand in nearly the same relation to Local Boards of Health as does our State Board. There is no officer corresponding exactly to our Secretary, but most of the inspection of the working of the laws is by one of the three inspectors of which Dr. W. is one. His territory is the Province of Ulster in the north-eastern part of the island, with a population of 1,750,000. The duties of these inspectors are to make investigations on order of the Board; to answer the call of the Local Health Officers and in case of emergency act in quasie executive capacity for their Board. The inspectors hold office for life, if efficient, and have a salary of £500, increased to £700 after five years of continuous service. I was surprised to find that the complaints and difficulties of Health Officers are largely the same here as in Minnesota.

Dr. W. showed me a letter just received from a Local Board Medical Health Officer which, with a single change, might have been written to me by one of our Health Officers. He sent water for analysis to the district analyst; he reported typhoid fever; a careless and indifferent Board of Guardians (our Board of Supervisors), and asked the doctor to come up, inspect yards and buildings and stir them up. Typhoid fever is quite prevalent in Belfast at present, in town and garrison. But I failed to get reliable statistics, though I presume I might have gotten them of individual dispensary physicians. I did not learn that compulsory notification is the law but understood it was likely to be a matter of local option under new laws. I do not think that typhoid fever is reported by the attending physicians, except, perhaps, in epidemics; nor other infectious diseases, either, as regularly as with us. The vital statistics are reported directly to the Local Government Board at Dublin every week, and a general resume is published weekly as in England. Poor relief and the management of alms-houses and charity hospitals, with other relief, is the principal duty of guardians and of the medical men they employ.

Vaccination with humanized virus is compulsory for children over three months of age and it is very popular and general. Two years ago a sharp outbreak of small pox in Londonderry was easily controlled by vaccination and re-vaccination; and the removal of the sick to hospital. The first effort with infectious disease is to get the patient to hospital, specially or partly devoted to their care. I hope to see and examine some of these hospitals. I leave for Dublin to-morrow (November 27), and shall have enough to occupy me there in the short time I can give to it. Among other matters I shall arrange for a full file of the reports of the Local Government Board for our library.

C. N. H.

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LETTER NO. 3.

DUBLIN, Ireland, November 30, 1889.

I reached Dublin, Thursday (November 28) at 2:30 p. m. We celebrated Thanksgiving Day by a hearty supper of steaks and chops—turkey and cranberries not immediately available. Friday at noon I called on Sir Charles Cameron, the great Irish sanitary authority, who is the executive Health

Officer of the city. He received me very kindly and gave me a very clear account of the organization of sanitary work here. He is and has been for many years the heart and brain of public health, not only in Dublin but a strong power for good in example and by his writings throughout Ireland. Under his guidance I visited his laboratory in the Royal College of Surgeons and the museums, libraries, and dissecting rooms of the college; saw the students at work and had the pleasure of meeting some of the professors. The processes in use in the laboratory, for water analyses, are almost identical with those of our laboratory. Sir Charles has devised an ingenious apparatus for the automatic collection of the distillates in ammonia determinations, and for the introduction of the caustic potash and permanganate solution to the retort gradually, which he thinks facilitates the albuminoid ammonia collection. I obtained many valuable hints and suggestions and the various blanks used in recording analyses, not only of water but of milk and other foods. The libraries and museums are large and valuable. I arranged with Sir Charles Cameron for a full file of the publications and blanks of his office.

This (Saturday) morning I visited the Local Government Board offices and was courteously received by the Secretary, who explained to me the complicated organization of the sanitary health service, which is too elaborate for record in this place which must be but the diary of my daily observations, and cannot, in the nature of things, be my settled conclusions. These last will come after my trip is over and I have time to study the collection of reports and memoranda which I am getting together and forwarding to the office at home.

The Secretary's recital and replies to my questions gave me a strong impression of the variety of work which the Local Government Board of Ireland have to superintend and direct. The difficulty is, I infer, increased just now by the unsettled condition of Ireland. I find that the infectious diseases of animals is under the direction of the Veterinary Department of the Privy Council, and the registration of births and deaths is by the Registrar General. All these departments are relative to the rural and urbane sanitary authorities who report directly to all these central authorities. There is besides a mass of old local and general legislation which has been but partially superseded by more recent acts, so that the *abstract* made by the Secretary of the Local Government Board, for their use alone, covers more than 1,000 closely printed pages. Dr. ———, of the Local Government Board, sent for me, and we had a very interesting interview on the vaccination questions, now opened anew by the appointment of a Commission by the Imperial Parliament, to investigate the whole subject anew. I was glad to find that the public supply of vaccine is humanized, taken on points from eight day vesicles under the general direction of the Board, and distributed gratuitously to medical men on request, who are expected to use every effort to keep up the supply for themselves.

I was very kindly received by Dr. Alex. Nixon Montgomery, who has for twenty years directed the vaccine department of the Local Government Board, Ireland. I was glad to find that humanized arm to arm vaccination is the rule in his own practice, and that the lymph, both on points and in tubes, which he selects with exceeding care and distributes to Local Health authorities and physicians, is taken directly from infants' arms on the eighth (8) day from ves-

icles, which fulfill all of Jenner's conditions and those fixed by the large experience of the institution which dates back to 1804, when it was established by physicians and sustained by them and popular subscription, till it was taken over by the Local Government Board, who now control it. Dr. Montgomery informs me that the original virus has been kept up to date, and that the resulting vesicles are as typical and reliable as when he took up the work twenty years ago, and it had then been in use over forty years.

The doctor has very kindly furnished me with samples of virus, and the methods and blanks used in its collection and distribution, and I expect to get such parts of his experience in the use of humanized virus as will be of use to us in Minnesota and the other States.

Sir Charles Cameron gave me a very busy afternoon walk on Saturday. He went with me to one of the most squalid and unsanitary quarters of Dublin and then to several blocks of new tenements with which portions have been replaced. The new buildings are of brick in blocks one or one and a half stories in height, and renting from 2s. to 7s. 6d. and having from two to four or five rooms with a small back-yard with slop basin and water closets and abundant water of the city supply (a very good one.)

The streets are wide and—I think—with asphalt pavements and sidewalks. I hope to obtain copies of the plans and specifications for their laborer's dwellings. Sir Charles Cameron has been the prime mover and persistent supporter of these reforms—which are already telling on the death and sickness rates of the districts and very powerfully preaching by actual practice the lesson they were built to teach. They are not charitable measures but pay a moderate net profit to the capital invested in them. To catch the mail, I close this letter now at Bangor, North Wales, December 3.

C. N. H.

**I**MPORTANT TO LUMBERMEN, AND OTHERS EMPLOYING MEN IN CAMPS.—I am instructed to ask your immediate attention to the necessity of knowing that the men you employ this winter are thoroughly protected by vaccination against Small Pox. To avoid the terrible experience of a few years ago, vaccination is the sure safeguard. It is as much for the benefit of the men as for yourselves and the people at large. To be safe, therefore, re-vaccinate every one who has not had a successful vaccination within the last five years, and can show a good scar as evidence thereof.

Your foremen should keep a list of the men, in this respect, and should be on their guard against any eruptive disease appearing among them. Instruct them to isolate any one having suspicious symptoms, with their clothing and bedding, till a medical opinion, or sufficient time shall develop their true character. I will advise any one of them, promptly, who will write me for the purpose, and will be obliged for the earliest information of anything suspicious, that we may give assistance where needed.

Will you please acknowledge receipt of this circular, and give your co-operation to the plan here suggested?

Very respectfully yours,

FRANKLIN STAPLES, M. D.,  
Acting Secretary State Board of Health.

December 2, 1889.



# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
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VOL. V. NO. 11.

JANUARY, 1890.

WHOLE NO. 59

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF DECEMBER, 1889.

## DISEASES OF MEN.

Diphtheria.....	{ cases, 89
	{ deaths, 25
Scarlatina.....	{ cases, 55
	{ deaths, 4

## DISEASES OF ANIMALS.

Cases of glands remaining isolated or not accounted for.....	11
Reported during the month.....	0
Killed.....	1
Released.....	2
Isolated.....	0

Remaining Jan. 1st, 1890, isolated or not accounted for..... 8

NOTE. — Most of these are cases exposed, and isolated for further observation.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA  
FOR THE MONTH OF DECEMBER, 1889, REPORTED UP TO JANUARY 20.  
(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)

Total number of deaths, 956, against 798 last month; 534 males, 422 females; 47.04 per cent occurred in towns, 52.96 per cent occurred in cities over 2,000 population. Ages, under 1 year, 27 per cent; 1 to 5 years, 13.28 per cent; 5 to 15 years, 10.98 per cent; 15 to 30 years, 12.86 per cent; 30 to 50 years, 12.84 per cent; 50 to 70 years, 11.92 per cent; over 70 years, 10.76 per cent.

*Measles* 7 deaths (4 males, 3 females), in 5 localities, 5 counties. Ages, 4 under 5 years; 3 between 5 and 15 years. An increase over last month, but the mortality from this cause is very low.

*Scarlatina* — 23 deaths (14 males, 9 females), in 18 localities, 13 counties; 48 per cent occurred in cities over 2,000 inhabitants. Ages, under 5 years, 74 per cent; between 5 and 15 years, 26 per cent. Compared with last month mortality and distribution twice as great, and also greater than for corresponding month last year.

*Diphtheria* 73 deaths (37 males, 36 females), in 31 localities, 23 counties; 48 per cent occurred in cities over 2,000 inhabitants. Ages, under 5 years, 38 per cent; between 5 and 10 years, 26 per cent; between 10 and 15 years, 13 per cent; one death between 40 and 50 years of age. Mortality exactly the same as last month, but a wider distribution. Mortality less than for same month last year.

*Croup*—36 deaths (20 males, 16 females), in 21 localities, 17 counties; 39 per cent occurred in cities. Ages, under 5 years, 77 per cent; between 5 and 10 years, 23 per cent. A decided increase in mortality and distribution compared with last month, and greater than for the same month of 1888.

*Typhoid Fever*—62 deaths (39 males, 23 females), in 34 localities, 27 counties; 48 per cent occurred in cities. Ages, between 5 and 15 years, 21 per cent; between 15 and 30 years, 46 per cent; between 30 and 50 years, 20 per cent. A slight increase in mortality compared with last month, and greater than for the corresponding month of last year.

*Diarrhoeal diseases of children*—17 deaths (11 males, 6 females), in 10 localities, 10 counties; 76 per cent occurred in cities. Ages, all under 2 years. Mortality same as last month, and for same month last year.

*Bronchitis*—22 deaths (12 males, 10 females), in 10 localities, 10 counties; 77 per cent occurred in cities. Ages, 81 per cent under 3 year old. Morality slightly increased compared with last month, but much less than for same month of 1888.

*Pneumonia*—49 deaths (33 males, 16 females), in 18 localities, 15 counties; 67 per cent occurred in cities. Ages, under 5 years, 39 per cent; between 5 and 15 years, 12 per cent; between 15 and 30 years, 12 per cent; between 30 and 50 years, 16 per cent. A slight increase in mortality compared with last month, but much less than for same month last year.

#### CORRESPONDENCE OF THE SECRETARY.

##### LETTER NO. 4.

MY last was from Bangor, Wales. I saw little of the sanitary work here, which is in a transitional state, so far as respects infectious diseases of men, which in November were made a matter of compulsory notification on the vote of localities in England and Wales. I have not the text of the law and do not write "by the book." I will send the law, or its substance, from London. I called on the physician of the infirmary in Bangor, but though 9:30 A. M., I was informed he was "in his bath," and I failed to see him. From Bangor we went by carriage along the sea coast of the Irish Sea to Conway, fourteen miles. Wherever opportunity offered watering places of more or less pretension have been built. They are most substantially built of stone and brick in very formal style. The amusement seems largely boating, fishing and bathing. "Public houses," a respectable name for a "liquor bar," are common, but surrounded with restrictions of custom and oversight, which, to some extent, regulates them. Taken as a whole these watering places between Bangor and Conway would hardly fill our idea of a watering place. It must be understood that John Bull builds such places as substantially as his other work is done. There is nothing of the look of temporary use which our watering places always suggest in their fancy and fragile wooden cottages. It was too late in the year to find many people at these places, and they looked as if "closed for the season." Conway is a "walled city," surrounded by a high wall and twenty-one towers, with a grand old castle on the water front. The old hotel in which we have had our quarters, is built on the ruins of an old religious house and is centuries old itself. It is a curious thing to meet the latest sanitary appliances in rooms and buildings so ancient. The people all through Ireland

and Wales have a ruddy, healthy look in the young and middle aged, and I saw many hearty old folks. In Dublin and Belfast—but much more in the first named—I saw a good deal of the poverty side of life, of which we have in the West so little. People are not crowded into great tenement houses as in England and the great cities of our own country. From Conway I went to Chester, England, a very quaint old town, known the world over for its strange “rows,” in which the sidewalk goes through the second story front of houses half way around a square, instead of along outside as with us. The houses are dark and crowded where this arrangement is in use; but architects are modifying the idea in new constructions, so as to make it quite convenient and to afford covered ways in rainy or snowy weather, along the front of the shops. The old town is built largely on ground made out of the accumulations of centuries, it is said, a dozen or more feet deep, for at that, and lower depths, Roman remains are found.

Liverpool, I had no time to investigate sanitarily. I hope to reach it from London. We spent Sunday, December 7, at the old town of Gloucester, and I saw many odd peculiarities of English country and town life. This is the centre of the district devoted to Hereford cattle breeding, but a glass of milk cost me four pence, (eight cents) or at the rate of thirty-two cents a quart, though that was at a hotel and not a dairy.

I arrived in London yesterday, December 9, and have already got well started for my winter's work, in preparing arrangements for correspondence, getting lodgings and learning my first lesson in getting about London streets. It is very hard to believe that within a radius of three miles there are 5,000,000 people, and at this hour, 11 P. M., in our street, (New Bond) just off Piccadilly, it is as quiet as in a Minnesota village. The only noise, beside the subdued roar of the city, is an itinerant vocalist on the street who accompanies himself on the guitar and sings sentimental songs, just such as we hear at home. The weather to-day is dull and there has been rain some of the time.

Great interest is felt all through this country just now about the *Russian Influenza*, which some Russian physicians seem to think is the forerunner of cholera next summer. I have not yet had the opportunity to get at the best opinion here about it, but I send an article from the *Pall Mall Gazette* of to-night, which is a fair resume of what is now known of the disease. I shall know more about it soon and will write more fully if occasion requires.

I hope to-morrow to make the acquaintance of the medical men connected with the Local Government Board, and to begin my studies of English methods and work in matters of Public Health. Meantime I am reminded by letters of inquiry from prominent Health Officers of our own country, that I may be able to serve some of our own Health Officers and physicians in getting facts or other information on sanitary or other questions for them. I shall be glad to do anything I can in this way. Address me, care of the United States Exchange, No. 9, Strand, London.

C. N. H.

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SMALL POX IN MINNESOTA DURING DECEMBER, 1889.—*In Minnetonka Tp., Hennepin Co.*—Reported by the Town Clerk, December 12, and by the Health Commissioner of Minneapolis, Dr. S. S. Kilvington, December 13, as follows: A young man, native of Missouri, arrived in Minneapolis, De-

cember 10, and went directly to Minnetonka township. He was ailing and was removed to the county poor farm, where the county physician pronounced the case confluent small pox. As requested by the County Commissioners, I took charge of the case and removed him to our quarantine hospital. All inmates and employes of the county poor farm, and some others, ninety-seven in all, were vaccinated immediately. The Local Board of Health employed Dr. Burton to act with them. They have been supplied with material for proper disinfection, and Dr. Burton has been provided with 300 points of vaccine virus, with which to vacinate all children and others exposed. I will co-operate with the Local Board. No cases reported since.

*In Sleepy Eye (V.) Brown County.—(Proves to be chicken pox).—*Reported by the Health Officer December 16, one case, reported to him by a local physician, who in consultation with an outside physician, diagnosed it small pox. A young lady from Wisconsin, three weeks previous, been ailing seven days before medical assistance was summoned. The Health officer, Dr. Welcome, took the precautions which the case demanded. There now appeared to be some doubt as to whether the disease was small pox, and the Mayor employed Dr. Kilvington, Health Commissioner of Minneapolis, to examine the case. This he did, and pronounced it doubtful. However the Health Officer treated it as genuine, until sufficient time had elapsed to prove the case to be only one of chicken pox.

The Local Board of Health and community are to be congratulated upon their prompt and vigorous action in this case, which was maintained until the exact nature of the disease was proven beyond doubt.

#### OUTBREAK OF DIPHTHERIA IN THE VICINITY OF GEORGETOWN, CLAY COUNTY—ITS HISTORY AND LESSONS.

IN the month of November, Health Officer John Kurtz, M. D., of Moorhead, was sent by the State Board to make investigation and render assistance to the diphtheria infected district in the vicinity of Georgetown. The following abstract from Dr. Kurtz' report to the Board has some points of interest, showing the manner in which an epidemic of diphtheria may very gradually gain a foothold from a small beginning, and how much greater difficulty is experienced in doing efficient sanitary work in the way of prevention of an epidemic in a country district like the one in this case, than in the city where quick detection is possible and prompt action can be taken.

Dr. Kurtz went to Georgetown November 23, and found the Town Board unable to work, two of the members being at home sick with diphtheritic sore throat, and their families sick. In the emergency the Board had very properly appointed a Mr. John Goss, formerly a hospital steward, as health officer, who for weeks did the most efficient sanitary work for the Board.

December 9, the Chairman of Georgetown reported that the disease was under control, no new cases appearing. Thorough disinfection of houses and contents is being pushed, but isolation has not yet been removed.

"Hans M. Sander, formerly a citizen of Minneapolis, came to this county about the middle of last July, renting a house on Section 1, in a fractional township on Red River, and adjoining the northwesterly corner of Georgetown. About three weeks later he was joined by his family from Minneapolis where they had diphtheria, subsequent to the departure of the father, and one of the



children died from the disease in a malignant form. Sander's wife claiming that their effects had been thoroughly disinfected and fumigated before leaving Minneapolis.

The Sander family, after a few weeks, moved into another house (Sec. 34, Lee Tp.) and after another short stay finally settled permanently on Sec. 16, Lee Tp.

On the fourth of August, a child, four years of age, in the family of Gulik Olsen, living on Sec. 1, a short distance from first house occupied by Sander, was taken ill and died the next day, and from all accounts had malignant diphtheria. Two other children, younger than the one that died, although evidently fully exposed, did not contract the disease. The child had no medical treatment. While sick, the parents of the child used their hands to remove discharges from the patient's mouth and nose, the father wiping his hands on his trousers, the mother using her dress for the same purpose. These details are important as furnishing the manner in which the contagion was conveyed in the latter history of the outbreak.

Late in August, Olsen, wearing the above mentioned pants, hired out on the farm of And. Haviland, (living on Sec. 2,) in township of Georgetown, about five miles east of Olsen's place. Within a week or two, a daughter, eight years of age, of Haviland's, had sore throat, fever, etc., and the parents supposing it to be scarlet fever, a disease the farmers in that locality consider mild, treated the child without medical assistance. Shortly after recovery, the girl attended school at the Middleton school house, located about a mile from Haviland's place, (Sec. 10,) and during the latter part of September and through October, a large number of the scholars in the same school were affected as she had been. They all seemed to recover, without a physician being called, their parents believing them to have scarlet fever. It was not until late in October that the disease assumed a malignant type.

October 24, a daughter of Ole Jesme, (Sec. 27,) was taken sick, and after a week's illness, began to recover. This child, age seven, was the only one out of a family of eight children—ages seven to twenty-one—who contracted the disease. November 6, Ole Lewis, (Sec. 2,) had a daughter, eleven years old, taken sick, and the child died on the thirteenth; very malignant form. About same time his hired man, (Nels Johnson,) was taken also; malignant form; recovered. On the ninth, Miss Lewis, the teacher at the Middleton school house, and a sister of Ole Lewis, was taken sick with a mild form; recovered. Also about the ninth the hired woman at Lewis', and her child, were taken, the latter, aged two years, died shortly after; the mother recovered.

November 8, J. O. Jesme, living half a mile southeast of Ole Lewis' had a son, nine years old, taken sick; died the next day.

November 8, Ole Lacken, (Sec. 14,) seven children, ranging from six weeks to eleven years. On the eighth, a boy eight years, died; been sick a week. Another boy, twin to first, taken eighth, died tenth. Boy six years, taken eighth, died tenth. A girl, eleven years, taken ninth, died thirteenth. Another girl, age four, taken ninth, died thirteenth. Two of these cases in the Lacken family were mild at first but soon became malignant; the other three were malignant from the beginning.

November 13—The next case was a woman working for O. H. Mithong, (Sec. 15.) The disease was mild in form and she shortly recovered.

November 13, And. Haviland, (Sec. 2,) had two children, boys, ages three and six; they escaped when the others were sick in September, but now had the disease in a malignant form; are now convalescing.

November 15, Jens Quam, (Sec. 15,) had six children, ages three to thirteen years; mild form; all recovered.

November 15, Knute Rasmusson (Sec. 16,) had five children, ages eight to fifteen years; mild form; all recovered.

November 15, Mr. John Goss, H. O., (Sec. 32,) had all his children, six in number, taken with a mild form; their ages range from eight to nineteen years; all recovered.

November 16, J. P. Johnson, (Sec. 14,) three children, ages nine, eleven and fourteen; mild form; all recovered.

November 16, And. Dalen, (Sec. 10,) Town Supervisor, and his hired man; mild; recovered.

November 21, Mrs. Tollof Hanson, (Village of Georgetown,) membrane well marked in fauces, quite sick, although severe, recovering. I was telegraphed to see this case on the twenty-second, and while in the village emphasized the importance of thorough and decided quarantine. This has been the only well marked case of diphtheria in the village of Georgetown, although there has been a large number of inflamed and swollen throats or tonsils.

Between November 19 and 23, the following families are reported as having had sore throats, doubtless due to the prevailing epidemic: L. Kleve, (Sec. 24,) five children, ages, eight to sixteen; Chris. Loc, (Sec. 2,) two children, ages, two to four; Jake Wambach, (Sec. 32,) nine children, ages, two to twenty; Jos. Zinke, (Sec. 29,) four children and self and wife; Geo. Zebach, (Sec. 29,) two children, ages, two and six, and wife; Adam Steen, Chairman Local Board, (Sec. 30,) self and seven children; A. S. Haviland, (Sec. 15,) four children, ages, three to ten; Ole Jesme, (Sec. 27,) six children, ages, seven to twenty-one, all recovering. Three children of O. Jesme escaped at first part of outbreak. It is remarkable in the present outbreak of diphtheria, with the first case a malignant and fatal one, that so many mild cases should follow through an interval of over three months, during which period a large number of children were sick with what we have every reason to believe to have been diphtheria, although of a very mild type.

The Middletown school furnished a ready vehicle for the reception and distribution of the infection, until every scholar, with hardly an exception, including the teacher, were stricken down. The culmination in malignity was reached between the 6th and 13th of November, when all the deaths, nine in number, occurred inside of a week. I am informed that one, if not more, funerals, were public; also that in several instances the dead were unburied for several days. The efforts of the Local Board to prevent the spreading of the infection, and the directions in regard to cleaning and disinfecting, were almost totally unheeded by a larger majority of the people in whose houses it had existed.

Mr. Goss, the Health Officer, worked day and night visiting the sick, and used every means in his power to check the epidemic, but received little or no encouragement or assistance.

The town officers personally visited the houses of the afflicted and rendered any and all assistance in the shape of medicine, clothing and provisions, even in one instance building a house for a family of nine who were living in one room 12x16, with five children dying in their midst.

While in one or two instances the infected premises were cleaned after a fashion, or some attempt would be made to observe some manner of quarantine, the rule was to disregard all attention to cleanliness or prevention of infection. Realizing their helpless condition to cope with a malignant disease under such conditions, the Local Board appealed to the county authorities, and they in turn referred the matter to the State.

Nels Dalen has followed the path of the Sander family and most thoroughly fumigated, cleansed and disinfected everything occupied by them since their arrival in this country, also including the abodes of several families among the Sander's acquaintances on general principles.

The Middletown school house and over half the infected houses in that district have already undergone the same process. And. Dalen and Mr. J. Goss are rapidly pushing the work in person, assisted by a son of Mr. A. Stein, and before the close of the current week will have the infected district almost entirely cleansed. The manner of cleaning and disinfecting is in accordance with directions for same from tract on diphtheria. Copies of Chap. 132, and circular on contagious diseases have been handed to everyone, and proper isolation and quarantine is now insisted on and enforced. Every school in the township has been closed, and religious gatherings, dances, social parties, etc., have been forbidden until the disease has been fully wiped out.

In Georgetown township, no new cases has been reported since November 23; and it seems likely that diphtheria in that locality is well under control, although it is of the greatest importance that each and every house or individual who has been in any way exposed to the lodgment of germs, unless efficiently disinfected, becomes a dangerous vehicle for distributing infection.

From a careful study of the cases I have had reported, I classify them as follows: Malignant cases, 18; mild cases and diphtheritic sore throat, 63; total, 81. Among the malignant cases were 4 adults, (1 male and 3 females,) all recovered, leaving 14 children (7 males and 7 females). The average:

Average age of male children sick, malignant form,	6.3 years
"    "    female "    "    "    "    "    "	6.6 "
"    "    "    "    died, "    "    "	6.2 "
"    "    male "    "    "    "    "	7. "

It is a noticeable fact that there was not a single case reported of a nursing infant having had this disease, although in several families where the disease was in a malignant form, were infants under six months."

**A**LL ABOUT INFLUENZA—AN INTERVIEW WITH AN EMINENT PHYSICIAN.—Londoners, and indeed all English people, will feel a certain amount of alarm, or at all events considerable interest, in the accounts which are daily published of the approach of a strange and apparently somewhat unknown disease which the newspapers are calling influenza. Influenza itself is of course a household word. Everybody in England, when the east winds blow, when the fog gathers, when the rime is on the windows, knows what an "influenza cold" is; but this is quite different from the fever which has been having such widespread effects in Russia, particularly in St. Petersburg, and which has now made its appearance in Vienna at the general hospital, where thirteen persons are at present suffering from this most unpleasant complaint. The interest which English people will take in the matter will be materially increased by knowledge of the fact, chronicled in yesterday's *Pall Mall Gazette*, that two decided cases of influenza, or epidemic catarrhal fever, have recently occurred at Bedford Park, and that consequently, if precedent is worth anything, it is likely to extend itself. A representative, who has been making some inquiries, sends the following account of an interview which he has had with a physician of eminence who is well acquainted with the disease, and who gave our representative not only a history, but much etiological and pathological information concerning it.

"Of the causes of influenza," said the doctor, "it is difficult to give any decided opinion. Predisposition of course has much to do with it. A person is just as liable to be affected with it if his employment be indoors as if it were out of doors. The majority of authorities consider that it has no connection with atmospheric conditions, although it is decidedly most prevalent during violent changes of temperature, and in foggy, damp weather. Yet, strange to say, it also prevails in countries where hot, dry weather is the rule, as in Egypt and other tropical climates. Little is known of the exciting causes. It is believed to be contagious, yet quite often the surgeons, nurses, and room-mates of a patient remain wholly unaffected. But you see, in the cases reported from Vienna, it is the surgeons and nurses of the general hospital alone who are stricken. Again, the fact that its ravages are very often confined to one por-



tion of a town may have given rise to the notion that its spread is due to contagion; and again, its spread is far too rapid to be explicable by the theory of contagion. The older writers refer to a 'living miasm' in the air, and it is probable that there is a malarious condition of the atmosphere where the disease is prevalent.

"The history of influenza is interesting. It has had as many names, and more, than a cat has lives. The French call it 'la grippe;' the Germans 'modefieber,' or fashionable fever; 'schafhusten,' or sheep cough; 'huhnerziep,' or crowing; 'blitzkatarrh,' or lightning catarrh; and it is also known in France as 'barraquette,' 'petit courier,' and 'la follette.' It is, moreover, called by some authors Spanish, and by others Russian Catarrh. These are only some of its many names. The first knowledge we have of influenza is in the sixteenth century, when, in 1510, a series of epidemics spread from Malta. Afterwards, in 1557, it reappeared and spread to North America; again, in 1580, it was met in Europe; in 1591, in Germany; in 1647, in South America; and in 1737, again in North America. The rapidity with which it spreads and the universality of its diffusion was well shown in 1830, when it began in China; in September of that year it was reported in the Indian Archipelago; in November on the confines of Russia; in January, 1831, it had reached St. Petersburg; in February it was met with in Livonia; in March it was at Warsaw; In April there were patients down with it in Eastern Prussia; in May, Denmark had it; in June it had spread through Germany and had reached Paris; in July it was in London; and in January and February of 1832, it had travelled over to North America.

"The symptoms of influenza," continued the doctor, "in the early stages very closely resembles those of an ordinary cold or nasal catarrh. It begins with a decided chill, hence one of the German names, 'blitz katarrh,' general uneasiness, alternating chills and heats, and considerable fever. The pulse is variable, it may be full or moderately accelerated, from ninety to one hundred beats a minute, or it may be small and weak. The mucous membrane and respiratory organs are first affected, but the digestive organs frequently suffer also. Just as in the ordinary cold-in-the-head, there are the uncontrollable tears, the running from the nose, followed by sore throat, difficulty of swallowing, hoarseness, cough, burning, tickling sensation in the throat, nervous depression, with pained expression of the face. The first and most liable persons to be affected by influenza are women, men come next in order of predisposition, and children last. Weakly and nervous people are especially liable, and it is a curious fact that sometimes, when there is quite an epidemic children seem to be exempt. The mortality is slight, recovery being almost always certain. It may prove fatal to aged and delicate persons and young children. Vigorous age bears it well; but of course it is a most depressing and troublesome disorder. The treatment? Why you are going to write quite an exhaustive treatise, surely. Well, well, the main points of the treatment are quiet, rest in bed, warmth, mild diaphoretics, good nursing, nourishment, and then tonics. That is to say, the ordinary treatment for mild fevers. There, now I have told you all I think I can at so short a notice about this terrible disease of influenza.—*Pall Mall Gazette, December 10, 1889.*



# PUBLIC HEALTH IN MINNESOTA.

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VOL. V. NO. 12.

FEBRUARY, 1890.

WHOLE NO. 60

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JANUARY, 1890.

## DISEASES OF MEN.

Diphtheria.....	cases, 44
	deaths, 25
Scarlatina.....	cases, 28
	deaths, 7

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	8
Reported during the month.....	5
Killed.....	3
Released.....	0
Isolated.....	2

Remaining Feb. 1st, 1890, isolated or not accounted for..... 10

NOTE.—Most of these are cases exposed, and isolated for further observation

## DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF JANUARY, 1890, REPORTED UP TO FEBRUARY 20.

(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)

Total number of deaths, 1169, against 956 last month; 640 males, 529 females; 42.7 per cent occurred in towns, 57.3 per cent occurred in cities over 2,000 population. Ages, under 1 year, 23.8 per cent; 1 to 5 years, 11.8 per cent; 5 to 15 years, 7.6 per cent; 15 to 30 years, 15.1 per cent; 30 to 50 years, 16.5 per cent; 50 to 70 years, 15.9 per cent; over 70 years, 9.7 per cent.

*Measles*.—2 deaths (1 male, 1 female), in 2 localities, 2 counties. The mortality from this cause is very low.

*Scarlatina*.—21 deaths (9 males, 12 females), in 8 localities, 8 counties; 76 per cent occurred in cities. Ages, under 5 years, 71 per cent; between 5 and 15 years, 29 per cent. Mortality slightly less than last month, but the distribution is much less. Mortality about the same as for the same month last year, but the distribution is less.

*Diphtheria*.—56 deaths (24 males, 32 females), in 27 localities, 25 counties; 46 per cent occurred in cities over 2000 inhabitants. Ages, under 5 years, 44 per cent; between 5 and 15 years, 41 per cent; over 15 years, 15 per cent. Mortality much less than last month and the same month last year.

*Croup*.—17 deaths (10 males, 7 females), in 12 localities, 10 counties; 53 per cent occurred in cities. Ages, under 5 years, 100 per cent. A marked de-

crease compared with last month and the same month last year, both in mortality and distribution.

*Typhoid Fever.*—35 deaths (25 males, 10 females) in 17 localities, 16 counties; 60 per cent occurred in cities over 2000 inhabitants. Ages, between 5 and 15 years, 22 per cent; between 15 and 30 years, 34 per cent; between 30 and 50 years, 40 per cent; mortality much less than last month and about the same as the corresponding month of last year.

*Diarrhæal Diseases of Children.*—9 deaths (3 males, 6 females) in 4 localities, 4 counties; 88 per cent occurred in cities over 2000 inhabitants. Ages, all under 4 years. A marked decrease in mortality compared with last month and the same month last year.

*Bronchitis.*—42 deaths (23 males, 19 females), in 11 localities, 11 counties. 88 per cent occurred in cities over 2000 inhabitants. Ages, under 50 years, 86 per cent; between 50 and 70 years, 14 per cent. A very marked increase in mortality and distribution compared with last month and slightly less than for the corresponding month last year.

*Pneumonia.*—178 deaths (100 males 78 females) in 76 localities 45 counties; 65 per cent occurred in cities. Ages, under 5 years, 17 per cent; between 5 and 15 years, 5.6 per cent; between 15 and 30 years, 25 per cent; between 30 and 50 years, 28 per cent; between 50 and 70 years, 24.4 per cent. Mortality nearly four times as great as last month, and more than twice as great as for the corresponding month last year. Under this cause are included 4 deaths reported as pneumonia following the la grippe.

*Influenza.*—70 deaths reported as from this cause; 73 per cent in towns and 27 per cent in cities. Ages, under 5 years, 37 per cent; between 5 and 15 years, 7.1 per cent; between 15 and 30 years, 10 per cent; between 30 and 50 years, 17 per cent; over 50 years, 29 per cent.

**TRICHINOSIS IN MINNESOTA.**—During December two outbreaks of this disease were reported.

*In Collinwood Township, Meeker County,* there were eleven cases and three deaths (two in one family), caused by eating sausage which had been smoked but not boiled, and which a party had kindly distributed to her friends and relatives. Several others ate the meat, but not before thorough cooking, and they were not affected. The matter was taken in hand by the Local Board of Health, and all infected and suspected meat promptly destroyed. A specimen of muscle from one of the victims was submitted to this Board, which, upon microscopical examination, fully proved the existence of *Trichinæ*.

*In Wallham Township, Mower County,* twenty persons more or less affected—one death. Disease is in one family and

among friends who had partaken a meal at their house. All infected and suspected meat has been located by the Local Board of Health, who have ordered it destroyed. Samples of suspected ham and sausage were submitted to the Board and found to contain *Trichinæ*, mostly in the encysted form.

We hope to be able to report these outbreaks in detail in our next issue.

SUSPECTED HOG CHOLERA IN WISCOY TP., WINONA CO.—January 13, Mr. Luke Nagle, C. B. S., reported that suspected hog cholera had appeared in his town. Three herds affected, and 18 or 20 animals have died. All infected herds are isolated. We need a veterinary surgeon to determine the disease. January 16, Acting Secretary sent Dr. Mason, of Winona, to make an investigation and advise the Local Board. This he did, and found the disease to be contagious pneumonia, reporting as follows:

“WINONA, MINN., January 18, 1890.

“I have made an investigation of the ‘hog disease,’ that you sent me out to see, and find it ‘contagious pneumonia.’ It has so far been confined to three herds. It originated in Mr. Corcoran’s herd and he lost twenty head. He has three left, which are apparently all right. His yard and pens are above the average and are kept in good shape.

“The neighbor’s hogs that are sick, got away from their yards and went to this place and after a short time came down with the same disease. One of the farmers lost three; the rest of his stock is all right. Another lost one and has three sick; but they are improving. I do not think the disease will spread further.

Yours, etc.,

“R. C. MASON.”

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#### CORRESPONDENCE OF THE SECRETARY.

LETTER NO. 5.

LONDON, January 3, 1890.

MY last letter was just after my arrival in London. Since then I have filled in the time as I was able. I began by calling on the medical officer of the Local Government Board. Dr. George Buchanan, the worthy successor of Mr. Simon in that position, the most important, in a sanitary sense, held by a medical man in this country.

I was received very cordially and every facility offered me for the work I have to do. I was very glad to learn the good impression which Dr. Rauch, Secretary of the State Board of Health of Illinois, made here, not only among sanitarians but before the Royal Commission, on vaccination where he was an honored witness as to American belief and practice. I have learned, in various ways, much about the composition and methods of work of this distinguished body, but not all that I hope to learn, and am not prepared to express an opinion as to the many questions involved in its origin and methods. But a small pro-

portion of its evidence already taken is in print nor does anyone seem to know how long it is likely to sit, nor when a report may be expected.

The whole question, not only of vaccination as we know it, but Jenner's experiments; his character and even his honesty with the statistics of long ago of small pox and vaccination are undergoing a bitter overhauling by the opponents, not only of *compulsory* infant vaccination, but of any vaccination at all. Some medical men are joining in the outcry, so far as the facts go, from other motives than go to get at the truth. The position of the supporters of vaccination is a defensive one and is sustained by a quiet and cool presentation of the overwhelming evidence in its favor. It is not just that I should attempt to review the discussion pro and con at this time, but to the best of my ability I am learning all the *established facts* relating to the question from whatever source they may come. One thing strikes me very odd. This outcry against vaccination for small pox comes at a time when the hope, not only of medical men and Health Officers, but of all thoughtful people, has been directed to the encouraging prospect that other vaccinations may be found to forefend, or alleviate, the attacks of other diseases. It is now generally admitted that Pasteur has succeeded in finding one for rabies, and all classes are expecting similar success in more common diseases as scarlet fever and diphtheria.

So far as I am able to discover, the popular confidence in vaccination in England is so great that the opposition is in the very small minority though a persistent and noisy one. My first study has therefore naturally been to discover what are the facts as to the production and use of vaccine virus in London. I have had every opportunity and shall be prepared to report in detail when I return.

I have visited the stations of public vaccinations who use humanized and animal lymph. I have seen these men at work and noted every incident which could throw any light upon the selection and use of the virus, its operation upon a large variety of infants, the character of the work done, and the accuracy of the records kept.

I have seen such virus collected and stored for distribution and watched it from the arm of the child into the glass tube used for its collection—seen the tubes sealed and watched the process of their microscopic examination at the office of the Local Government Board before they are accepted or issued for use, and the methods of recording the results there, and it is but justice to say that we have nothing approaching to the painstaking labor which is here given to secure the most perfect lymph and to protect it from all possibility of admixture and to bring it to the person upon which it is to be used in the most perfect condition. The name of every child vaccinated at these public stations is recorded with the age, sex, residence and physical conditions. It is brought back to the vaccinator on the eighth day, and the results of the operation are carefully recorded. Any unfavorable appearance is carefully recorded, too, and another examination is requested if anything untoward should happen afterward. Any such cases (and they are very few) are carefully watched and all discernable facts are ascertained and recorded, too.

The Local Government Board spares no pains or expense needed to get the true history of all cases found to present any unfavorable symptoms and promptly investigates all complaints as soon as received.



Perfectly typical eighth-day vesicles on healthy children who are carefully examined and found free of any abrasion, pimple or rash are used for supplying lymph. Only such lymph as flows without pressure and free of blood is collected in delicate glass capillary tubes which are immediately sealed at each end in a flame. They are put into separate envelopes and marked with the number corresponding to the record of the child from which they are taken. These tubes are immediately sent to the office of the Local Government Board where each is again recorded and carefully examined with a microscope. If clear, free from blood or any opacity, they are returned to their proper envelopes as fit for distribution. When called for they are again examined, and if still clear are sent out in the original envelope so that results can be traced from the person upon whom they may be used directly back to the child from which each one was taken. So much in brief as to humanized vaccine virus.

But the Local Government Board also cultivate and supply calf lymph. This is done in an establishment under the direction of Dr. Robert Corey, who began the work in 1881.

I have examined every detail here from selection and vaccination of the calves to the collection of virus from them, its immediate use on infants, and its collection on ivory points or in glass tubes for preservation and distribution from the office of the Local Government Board. It is expected, and is practically unavoidable, that such lymph will be mixed with blood in small amount, and it is considered no objection that it is so.

The collection is upon ivory points and in glass tubes, somewhat larger than are used for humanized lymph, and having a bulbous enlargement about midway of their length. This last is only issued for use upon calves. Neither the points or the tubes are examined microscopically. The only humanized lymph on ivory points issued is collected by Dr. Corey, who uses particular care in its selection as it cannot be examined microscopically after it is dried on the point. This only to meet a special demand. I have collected full details of the organization, expense and methods of the calf vaccine establishment with the kind personal help of Dr. Corey himself, and his assistants, Messrs. Stott and Collins. They have answered all my questions which I have made, to cover every detail of organization, cost and management. Dr. Corey has furnished me with plans of the operating tables and has selected specimens of the instruments in use for me. I have taken photographs, with their assistance, of the calves in position for operation; of the appearance of the vaccinated surface immediately after operation, and 96 and 120 hours after. Also I shall take a series of photographs myself of any children's arms any stage after the operation which may select.

To sum up, I shall omit no detail of inquiry which will enable us to judge fully and accurately of the work of producing and using calf lymph or of the arm to arm use of humanized vaccine. I propose to make an equally careful study of vaccination in Germany and in France, and shall collect all the literature (which we do not now have in our library), bearing on the subject which will be of practical use to us.

Thursday (January 2), I called on Dr. Brown, the Chief of the Veterinary Department of the Privy Council and Principal Royal Veterinary College. He

offers me every assistance in his power in the study of the infectious diseases of animals, and will give me such documents as he has published bearing on the matter. He gave me an introduction to Prof. Axe, at the college, who was very kind and will give me opportunity to see the work of the college as a teaching body, which I am very anxious to do.

Yesterday, Friday, (January 3,) I called on Prof. Klein, the distinguished bacteriologist, whose work is almost as well known and appreciated in America as in England. I found him in his private laboratory, in the college of State Medicine. He showed me many examples of the various forms of bacteria with which he is now dealing, both in culture and mounted, and accompanied their exhibition with a rapid and vivid description of their origin and significance. He is beyond question a master in his department and exhibits a caution in deduction and a patient persistence in experiment which confirms the opinions I had formed from reading his reports. I spent two delightful hours with him, and he showed me something of the work the college is doing in his department. I shall have more to report about his work later on.

I may note that he is unable to agree with the conclusions of Roux and Yersin of Pasteur's laboratory, as to the etiology of diphtheria, (Readers will remember the translation published in PUBLIC HEALTH, No. 6, for August, 1889) and one strong point he made is the fact that the bacillus of the French will only grow at a high temperature while as we know, by practical experience, the specific poison of diphtheria does as a fact grow at the common temperature in infected houses and things. I hope to get details of this side of what is to our people a very important question, and then to compare them with the work in Pasteur's laboratory when I go to Paris.

This letter is long enough, though it is way behind the matter available for it. It is only possible to make these letters, so to speak, indices of the facts being gotten together for our future use. It must not close, however, without the further note that I have begun collecting data bearing on the disposal of sewage, and to-day visited, with an official of the company, some artisan model tenement houses, buildings by a great company which already shelters, probably, 30,000 people of the laboring class. I saw so much of greatest interest and value that I propose to work up the matter into a special report, after seeing other model tenement house construction, including the Peabody buildings, which set the example now being so largely followed. I wish I could have had a cabbie, who was driving me the other night, tell into a phonograph the tale he told me of his old tenement house life at 7s. (\$1.75) a week, and his present experience in a Peabody building, where he gets three rooms, use of wash and bath-rooms, and perfectly cleanly quarters for 6s. (1.50). It was the most affecting tribute to Mr. Peabody's memory I ever heard.

C. N. H.

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LETTER NO. 6.

LONDON, January 12, 1890.

Since my last letter I have been nearly all of my available time at work. Tuesday (7th) visited the National Vaccine Institution, and it was a busy day

there. Dr. Corey used animal virus direct from the calf, on more than 100 children, and I saw a large number of children returned on "the day week," for examination as to the effect of the vaccination and a certificate of the result. I noted several cases in which the result was less than five (5) perfect vesicles in one case but one, and in others more than five. I saw no cases at this or other visits in which the areola was greater than we have very often with humanized virus, nor could I get any history of severe constitutional symptoms. So far as I could learn at this and other times severe symptoms (constitutional fever, very tender axillary glands, and large and dusky areola) have been associated with vesicles, broken by accident or carelessness. I have been particular to inquire about this matter of the effect of calf lymph direct from the calf and immediately into the arm of a child and contrary to my expectations based on the use of animal vaccine from points. The facts are an agreeable surprise. I have examined carefully a large number of arms and vesicles on the "day week" from which virus is removed in tubes for public distribution.

I find that much care is used in this selection, and I was surprised to see that virus removed with care from vesicles which bore every external mark of being perfect, gave lymph which was cloudy and often contained flocculi of lymph. A gentleman, who is now collecting humanized lymph here, has told me that of 700 tubes collected with the same care of which 500 were rejected, for this cause, at the office of the medical officer of the Local Government Board. I do not find that any one is able to explain the cause of this opacity or of the flocculi observed in the lymph.

I understand that the order requiring microscopic examination was issued by Mr. Simon and has not been changed since. So far as I can yet learn the motive was by excluding all but perfect virus and adding to that the clear record of the vaccinifer's condition before, during, and immediately after vaccination from the calf or by arm to arm. Every precaution will have been taken to exclude all sources of danger possibly attributed to the virus used. Shall refer to this subject more in detail in my report.

Tuesday, January 14.—Yesterday morning Dr. Klein showed a bacterium isolated from the expectoration of influenza patient. It is easily and rapidly cultivated and is present in enormous amount. It is a streptococcus and look like strings of small, round beads. I note its reported discovery on the continent in this morning's paper, and the description corresponds with the specimen I saw. It may be a difficult matter to prove its real character.

YORK, England, Thursday, January 16, 1890.

I came here on Tuesday, January 14, on the suggestion of Dr. Buchanan, that in this county and under the direction of Dr. Barry, the inspector of the Local Government Board in this county, I would find a fair specimen of the work of this class of officers and of local sanitary authorities, both rural and urban. I found that Dr. Barry had arranged to show me anything I wished to see in this section of England, and was enabled to arrange for the profitable occupation of all my time for several days.

I arrived at 7:30 p. m., and Dr. Barry devoted the evening to a patient and

kindly description of the rather complex distribution of what we at home know as sanitary work among a variety of local and national authorities. Yesterday we started early to a rural district, traveling partly by rail and partly by an omnibus. We returned to York by 2 p. m., having done enough of the inquiry which the doctor is making to let me see the character of the work and the methods of a rural village, if I may so express it, as most of the men are engaged on adjacent farms. I had the pleasure of meeting the Local Medical Officer of Health, who accompanied us in a house to house visitation, when the regular form of inquiries required by the Local Government Board were made and such others as the local circumstances suggested to Dr. Barry. The fine detailed maps, furnished by the government of every locality in England, greatly facilitate these inquiries, and I shall be very glad when something similar will be available with us. I cannot enter into the particulars of this inquiry not yet finished further than to note that it relates to an outbreak of diphtheria, due very likely, in large part, after the specific poison was once introduced to the intolerable filthy condition of the sewers and wells and to the foul "middens", by which name they designate the combined arrangement for collecting and preserving excreta and house refuse. How or when it was devised or why it should be permitted by local authorities it is hard to imagine. I noted the same unwillingness to act efficiently and promptly in a matter involving the expenditure of public money, and increase of local tax, here, as at home, on the part of local authorities. The concentration of agricultural laborers into small buildings of brick, old and crowded together with scarce any "room to the rear," or proper place for pig, pony or cow, makes the remedy of sanitary evils, to begin with, almost *destruction* before decent *reconstruction* is possible. In this case there are houses built early in the sixteenth century. I saw one with date 1620, with others of all dates since then standing close together some covered with a thick thatch, some with red tile, and some I saw with tile on old (very old) thatch. The buildings are very small with brick or stone floors, and the plaster is directly on the brick wall. Most were evidently damp. None had cellars and the tile or brick floor was directly on the filth-sodden soil. Most of the pumps I saw had the drain into which house slops are thrown directly under their spouts or near at hand with a cheap trap. I was told that most of the drains are of drain tile or brick with open joints. Wherever diphtheria or typhoid fever persist efforts have been made for remedy of the special drain involved, but there seems little system or other than "patch work" repair. Some of the houses have neat exteriors and tidy rooms joined to a condition of things "at the rear" which it would be hard to believe to exist without personal observation. Everything points to conditions for which present owners and occupants are not directly to blame, and to which lifelong acquaintance and familiarity has accustomed them. It has been a long and hard struggle to awake rural authorities to their responsibilities, but it is being done.

I must mail this letter here at Settle this morning, Monday, January 20, as I go on to Sheffield and Manchester.

C. N. H.



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VOL. VI. NO. 1.

MARCH, 1890.

WHOLE NO. 61

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF FEBRUARY, 1890.

## DISEASES OF MEN.

Diphtheria .....	{ cases, 62
	{ deaths, 21
Scarlatina .....	{ cases, 29
	{ deaths, 5

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for .....	10
Reported during the month .....	3
Killed .....	2
Released .....	0
Isolated .....	3

Remaining March 1st, 1890, isolated or not accounted for..... 11

NOTE.—Most of these are cases exposed, and isolated for further observation.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA  
FOR THE MONTH OF FEBRUARY, 1890, REPORTED UP TO MARCH 20.  
(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)

Total number of deaths, 859, against 1,169 last month, and 1,038 for same month in 1889; 452 males, 407 females; 50 per cent occurred in cities of over 2,000 inhabitants. Ages, under 1 year, 27.12 per cent; 1 to 5 years, 13.73 per cent; 5 to 15 years, 6.63 per cent; 15 to 30 years, 14.78 per cent; 30 to 50 years, 15.40 per cent; 50 to 70 years, 11.64 per cent; over 70 years, 9.42 per cent.

*Measles*.—2 deaths in 2 localities, 2 counties; both males, in towns. Ages, 1 between 4 and 5 years; 1 between 20 and 30 years. Mortality same as last month, but only one-tenth compared with same month last year.

*Scarlatina*.—8 deaths (3 males, 5 females), in 5 localities, 5 counties; 36.25 per cent occurred in cities. Ages, all under 5 years. Mortality about one-third as great as last month, but distribution not diminished in proportion. Mortality one-fourth compared with corresponding month of 1889.

*Diphtheria*.—43 deaths (24 males, 19 females), in 15 localities, 15 counties; 76.74 per cent occurred in cities. Ages, under 5 years, 53.5 per cent; between 5 and 10 years, 30.23 per cent; between 10 and 15 years, 7 per cent; over 20 years, 9.3 per cent. A decided decrease in mortality and distribution compared with last month, and the same month last year.

*Croup*.—9 deaths (5 males, 4 females), in 9 localities, 9 counties; 11.11

per cent occurred in cities. Ages, all under 5 years. Mortality, one-half that of last month, but distribution about the same.

*Typhoid Fever*.—16 deaths (8 males, 8 females), in 11 localities, 11 counties; 63.12 per cent occurred in cities. Ages, between 5 and 15 years, 31.25 per cent; between 15 and 20 years, 12.5 per cent; between 20 and 30 years, 43.75 per cent; between 30 and 40 years, 12.5 per cent. Mortality not one-half compared with last month.

*Diarrhœal Diseases of Children*.—14 deaths (7 males, 7 females) in 10 localities, 10 counties; 71.44 per cent occurred in cities. Ages, under 1 year, 64 per cent; between 1 and 4 years, 36 per cent. An increase in mortality and distribution compared with last month.

*Bronchitis*.—17 deaths (10 males, 7 females), in 9 localities, 9 counties; 64.7 per cent occurred in cities. Ages, under 3 years, 88 per cent. A decided increase in mortality and distribution compared with last month.

*Pneumonia*.—96 deaths (58 males, 38 females), in 59 localities, 42 counties; 47 per cent occurred in cities. Ages, under 5 years, 32.29 per cent; between 5 and 15 years, 51.02 per cent; between 15 and 30 years, 16.66 per cent; between 30 and 50 years, 22.44 per cent; over 50 years, 21.43 per cent. Mortality and distribution much less than last month.

*Influenza and La Grippe*.—88 deaths reported from these causes, their complications and sequelæ; 38 males, 50 females; 79 in towns and 9 in cities.

THE NEW TOWNSHIP BOARDS OF HEALTH.—These were elected on the eleventh instant. A circular letter was sent from this office, March 10, to all of the clerks of 1889, enclosing a postal card for them to fill and return, reporting the new organizations. This was sent to 1,302 towns, and to-day, (March 22,) 1,022 of these have been returned, and each mail continues to bring a number. Of 1,022 chairmen, 57.3 per cent were re-elected, and of the same number of town clerks, 80.7 per cent re-elected. It is very gratifying to this Board to have so many old officers hold over, as the work then goes on without a break, and we are not compelled each year to educate a new set of officers in their duties concerning the public health.

TO THE NEW CHAIRMEN.—To prevent any misunderstanding in the future, we desire to call your attention to this journal, which is the official monthly publication of this Board, and is for the purpose of providing a convenient means of communication with Local Boards of Health. It is sent to you *free of charge*, but is the property of the Board. It should be read each month, as it contains much concerning the duties of Boards of Health, and should then be filed in the office of the town clerk for future reference, as many times, in answering inquiries, we are saved labor by referring correspondents to back numbers of PUBLIC HEALTH. With this number begins the sixth volume.

**L**EPROSY IN MINNESOTA.—As will be seen in the minutes of the last meeting of this Board, published on page 3 of this issue, Dr. Chr. Gronvold, of Norway, Minn., formerly a member of the Board, has been asked to make a thorough investigation of this matter and report. This action has been taken because of the late newspaper consideration of the subject, and to correct with the exact facts the idea which some have conceived that this disease exists in this State to an alarming extent. On page 5 of this issue will be found a letter from Dr. Gronvold, commenting upon certain statements which have been made concerning this disease in the Northwestern States. It may prove interesting to those who desire to learn the facts from a reliable source.

This investigation will be made in the name of the State Board of Health, and Health Officers, Chairmen of Town Boards and others can assist very materially by reporting to the doctor any cases, or suspected cases, which may exist in their locality or vicinity.

**M**INUTES OF A MEETING OF THE STATE BOARD OF HEALTH, HELD IN THE GOVERNOR'S ROOM, CAPITOL, ST. PAUL, FEB. 20, 1890, AT 2:30 P. M.—Members present, Drs. Staples, Davis, Millard, Leonard, and Phillips. As the President, Dr. Staples, was acting Secretary, Dr. Davis was called to the chair. The minutes of the previous meeting were read and approved. Dr. Staples, as acting Secretary, presented a review of the work of the Board since the absence of the Secretary. PUBLIC HEALTH has been issued regularly. On February 1, all the funds showed substantial balances in favor of the Board. One case of SMALL POX had been reported, December 12, in Minnetonka township, Hennepin county, which had been promptly dealt with, and no more cases resulting. A suspected case had been reported from Sleepy Eye, but it proved to be chicken pox. Four hundred and forty cases of DIPHTHERIA had been reported since Aug. 1, 1889. The disease had not existed in epidemic form except in Georgetown township, Clay county, where it was promptly crushed out after having been reported to the State Board. During the same period 150 cases of SCARLATINA had been reported. It had not existed in epidemic form. Two outbreaks of TRICHINOSIS had occurred in different and widely separated localities. There were 31 cases and 4 deaths. Since August 1, 1889, 14 cases of GLANDERS had been reported in 8 localities—11 horses were killed, 2 released, and one remained unaccounted for. A suspected outbreak of MALADIE DU COTÉ in horses, upon investigation proved not to be true. A suspected case of HOG CHOLERA was found to be contagious pneumonia. The lungs from a tuberculosis cow had been examined and the carcass advised to be burned. A complaint of river pollution had been investigated. The report was accepted and placed on file.

Dr. Staples presented a communication from Dr. A. F. Kilbourne, Superintendent of the Second Hospital for the Insane, which was accompanied by

plans and specifications for a proposed system of sewage disposal at the Hospital. These plans had been submitted to the Trustees of the Hospital, and approved and accepted by them, subject to approval by the State Board of Health. After thoroughly examining the plans, and listening to a description of them by Dr. Kilbourne, who was present, the Board passed the following resolution:

*Resolved*, That this Board approve of the proposed plans of sewage disposal for the Second Hospital for the Insane, prepared by Wm. J. MacHarg, and presented by the Board of Trustees of the Asylum.

Dr. Staples called the Board's attention to the matter of leprosy, which has recently been discussed in the newspapers. It was decided to employ Dr. Chr. Gronvold, a former member of the Board, to make a thorough investigation of the disease in Minnesota, and report the facts to the Board.

Dr. Staples presented the matter of suspected scarlatina in Park Rapids, Minn., where local physicians disagree as to the diagnosis. The Local Board asked the State Board to send a physician there to determine the true character of the disease. After reviewing correspondence on the subject, it was decided that the Local Board should employ such physician, if they thought necessary, inasmuch as no deaths had resulted from the disease.

Meeting adjourned at 4 P. M., to meet at the call of the Secretary.

**SUSPECTED RABIES IN NEW ULM.**—Considerable excitement existed here about the middle of last month on account of this disease. A dog, owned by George Schneider, died January 15, of suspicious symptoms. Two days before he had bitten one of Mr. Schneider's horses. In a couple of weeks two cows began foaming at the mouth, acted strangely, and were tied up. About this time a strange dog appeared on the streets of New Ulm, raving and biting everything within reach. These facts together, gave rise to the opinion that Rabies was present. The dog and Mr. Schneider's two affected cows were killed. In a short time two others began to show like symptoms, from which they died. The Local Board of Health was appealed to, and they employed Dr. Schwartzkopff, of the State University, to investigate the matter. He disinterred the dog and cattle and held a post mortem over them. In the dog were found a multitude of shot, which would indicate the cause of his being "mad," being healthy otherwise. The cows were found to have died from a contraction of the third stomach, caused by continuous feeding spent of malt.

**LEPROSY IN MINNESOTA AND THE NORTHWEST.**—The subject of leprosy has received some notice by the press of this State during the past three or four months. The State Board of Health has done good work for several years in making a study of the disease as it has appeared in Minnesota, and reports of the Board have from time to time been given to the press and published in its transactions. A few weeks ago arrangements were made by the State Board with Dr. Christian Gronvold, of Norway, Goodhue county, a former member of the Board, and a physician who has made this disease and its existence and history in this country a special study, to make thorough investigation of the disease as existing here at the present time, and from time to time to make reports to the Board. In this work Dr. Gronvold has had, as a correspondent, Dr. K. Hoegh, of Minneapolis, who has done much in the study of leprosy.



Dr. Gronvold has the advantage of being familiar with the investigations and report of Dr. G. Armauer Hanson, Surgeon-in-Chief of Leper Hospital, Bergen<sup>1</sup> Norway, who was sent to study the disease in this country, by the government of Norway, about three years ago.

The following letter was recently written by Dr. Gronvold to the State Board:

DR. FRANKLIN STAPLES,

President Minnesota State Board of Health,

*Dear Sir:*—In Duluth, recently, a Miss Flavin (I think this is the name) has been lecturing upon leprosy. I understand that she has a medical education and intends to go to the Sandwich Islands to take the place of the late Father Damien. She tells the Duluthians that there are 160 lepers in the three Northwestern States—Wisconsin, Minnesota and Dakota—that lepers are everywhere in Scandinavian settlements, and that Minnesota must, as soon as possible, establish isolation hospitals for them.

I have been informed of the above statement by Mr. A. Lang, the editor of the *Scandia*, published in Duluth, and I communicate them to you, fearing that this young lady may succeed in creating another leper scare in our State. I wrote to Mr. Lang, stating that the State Board of Health had had the matter in hand since the first appearance of the disease in this State, and that it had, at different times, canvassed the State for lepers, and that these investigations were continually going on, the results of which have many times been published, so that anybody who desired could know the facts. Miss Flavin's remarks revealed the fact that she had only read the first part of Dr. G. Armauer Hanson's report, in which he states that about 160 lepers had, since immigration began, come into the three States above mentioned. If she had read farther she would have learned "that of 160 lepers who had come to these States, only 13, which I have myself seen, and perhaps 3 or 4 more are now alive. Among all the descendants of lepers, that I have seen, (and I have seen them in the third generation, great-grand-children) not one has been leprous." This is from the report published in German, in Verchow's Archives of Pathology, Anatomy and Physiology, and in the Medical Clinic, 1888; have also seen something similar in American periodicals.

Mr. Lang will publish these facts, as well as Dr. G. Armauer Hanson's statements concerning the disappearance of this disease in these Northwestern States.

March, 1890.

CHR. GRONVOLD, M. D.

#### CORRESPONDENCE OF THE SECRETARY.

LETTER NO. 7.

LONDON, January 25, 1890.

I returned to London yesterday, 24th, after a very busy week of sanitary work in Yorkshire, Lancashire and Leicestershire counties, under the personal guidance of one of the ablest medical inspectors of the Local Government Board of England, Dr. F. W. Barry. I visited York, Hull, Bradford, Sheffield, Manchester and Leicester, besides several rural districts and a half a dozen vaccinating stations, where I assisted Dr. Barry in the examination of some hundreds of children who had been vaccinated and were presented to show the character and results of the operation as performed by the official vaccinators, rural and urban. I also saw the officers (all qualified medical men,) at work in each place. The method is "arm to arm" vaccination. The operator selects (from the number of cases reporting on the eighth day after vaccination,) such as have a clear record, clean skin, good health, and typical vesicles, and uses one at a time as the vaccinifer. The vesicles are gently pricked with the point of a clean lancet so that the clear virus runs out in little drops like dia-

monds. The child is often asleep or nursing in its mother's arms. Then one at a time the record of each candidate for the operation is made up and recorded. If well and free from any eruption it is brought to the operator who (in Yorkshire, I observe,) uses an instrument like a silver tube, and the size of a penholder, from one end of which projects five needle points ::, the central one a little longer than its fellows. They project just far enough to go through into the true skin and using gentle pressure the operator fixes the needles in the skin and rolls the shaft between his fingers so that the wound is something like this °. Scarce any blood is drawn and no pain occasioned. Four wounds are made thus :: very quickly and then the virus taken from the little drops on the vaccinifer's vesicle on the lancet are gently rubbed in with the lancet and the operation is complete. The whole operation is rapid, clean, neat and, judging from hundreds of results which I saw, every way satisfactory. The danger is the transfer of blood by the needles or face of the silver tube. Blood I did see on the silver more than once but it was carefully removed by a dip in water and the use of a towel. This danger avoided by care after each use. The method is the most painless and expeditious I have yet seen. Such care in selection and use of vaccine by Local and Government authorities and such careful registration of results with prompt and painstaking investigation of all complaints and of every departure from normal fungus in the vesicle we know nothing of in our country.

I shall have full details to bring home with me as in view of the present Royal Commission on vaccination, a large and recent collection will be available in addition to those which I have spent a good deal of time and care to collect by personal observation for myself.

It would be tedious in these letters to go into detail as to water supply, sewage disposal, garbage cremation and disinfection of infected things, all of which I am investigating thoroughly and collecting any valuable information about. I saw at Bradford the best working plant for garbage destruction I have yet seen, and the engineer has furnished me with drawings of the new one to be built. The old are wearing out and experience has suggested very valuable changes. The plan will, I think, be adopted elsewhere in England. I met the engineer of the Local Government Board, who has made a special study of destruction in Bradford, and have the promise of his assistance in getting my data up to date. Sheffield has an expensive plant for purifying the sewage by the use of lime, very much as at Orange, N. J., but much better. I examined it carefully and shall report on it in full.

The midden closet, in some form, is in use throughout Yorkshire, and I have many details about it. It is everywhere there a failure and a makeshift to be replaced ere long, I believe, by better methods.

Manchester is distinguished by its "pail" method of disposing of excreta. Zinc and steel pails of several gallons' capacity which are filled and sealed with an iron cap having a rim of rubber tubing held by a spring. Over 65,000 are in constant use, I believe. (The exact data has not yet come to hand.) They are removed by the city weekly, or as often as need be, and for one part of the city are dealt with at a great building in this wise. The loaded pails come in closed wagon on which is also brought the garbage. The contents of the pails, which are largely semi-fluid, are coarsely filtered to get rid of solid matters,

and then go into great closed boilers, like evaporators, in which the mass is constantly stirred by machinery, heated by steam, and the vapors are drawn off under and into a furnace maintained at a very high heat, with long chambers, in which all organic matter and offensive gases are burned. In this furnace also the solids of the pail contents are burned. The garbage, after coarse sifting, is fuel for the steam boilers.

There was a strong odor when we were there, but it was explained as due to blocked tubes of some new additions.

The pail washings are disposed of in tanks with diodorants and precipitants not very successfully. The night soil and of another part of the city are mixed and sent out to the city farm which is a great peat bog being converted by drainage and this material into a production farm. Full details in my report.

At Leicester, I met the Health Officer and the chairman of the committee on health of the city. My readers will remember that this city is notorious all over England and elsewhere for its official defiance of the vaccination law, which has resulted in so large a decrease of vaccination that for several years but a few children comparatively have received this protection against small pox. I was anxious to see for myself what is done there and I found that the city has a special act whereby it can deal with infectious diseases promptly in this wise; for small pox, for example, compulsory notification of the disease and removal of the sick to fever hospital and of the suspected to an isolated ward till discharged by the Health Officer, disinfection of things.

The Health Officer is as firm a believer in vaccination as I am, and use and urges it, and the chairman has himself accepted it in his own person. I have the details of a conversation in which he declined to say that he would not accept it for his children if they were exposed to the disease. I ventured to tell him that he dare not refuse them this protection if small pox threatened them.

I returned to London, yesterday, and have seen Dr. Thorne—Thorne of the Local Government Board Medical staff. As to cholera—it is and has been for some months in Mesopotamia, and seems slowly working its way toward the Black. Russia professes to be taking every precaution. Cholera has usually spread through Turkish territory toward the Caspian.

I am in a position here to learn everything of value on the subject and as Europe must suffer before we are likely to, we shall have due notice of its coming. Meantime the lesson of being always ready, which we try to make the standard of our work in Minnesota should not be forgotten. Pure air, water and soil are the real safeguards against cholera and many other and more important diseases.

I see you have in common with the rest of the world got the influenza in Minnesota. You will find a capital description of it in Sir Thomas Watson's Practice, and in the writings of our best medical authors of the last outbreak in the United States. I have had it here and my symptoms were as there described. In itself, if one will go to bed and be quiet and sensible for a few days it is usually harmless but quite debilitating. Its real danger is when it strikes one already enfeebled by other diseases, or predisposed to diseases of the lungs. Even here, if the patient will surrender early and go to bed under competent medical care, the result is often favorable under what seem very serious com-

plications. I should advise those who look to me for advise: *Don't get chilled; attend to every "cold," however slight.* Avoid *drugs* for *prevention* and rely on warmth, rest, light diet and freedom from exposure to changes of temperature till well. I shall be able, I hope, to send some slides of the supposed "influenza microbe" to the office of the Board.

C. N. H.

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LETTER NO. 8.

LONDON, Saturday, February 1, 1890.

I have given up the forenoons and part of the afternoons of this whole week to a study of the work which Dr. Klein has done recently in the matter of the discovery of the special cause of diphtheria; or rather I prefer to say, the micro-organisms which invariably accompany the disease. I have followed a specimen of "exudate" membrane from the throat of a recognized case of diphtheria into the bodies of certain animals and through cultures in various media, and those cultures into another series of animals and back again into pure cultures. The work is still in progress and not ready for publication.

I have had every opportunity to watch every detail of the work done by Dr. Klein himself and explained as done. I shall return here on my way home from the continent, where (in Paris,) I intend to see the work done in the same direction in the laboratories of the School of Medicine and of Pasteur. I have also assisted in a series of experiments with glanders by Dr. Klein.

Last Wednesday Prof. Brown, Principal of the Royal College of Veterinary Medicine, and Chief of the Medical Staff of the Privy Council as respects diseases of animals, had invited me to hear him lecture. The subject was glanders, and the specimen was a pair of lungs from a horse in the stage of nodular deposit of glanders and before any putrid action had occurred. He gave me a large section of the lung which served for the work which was done by Dr. Klein, viz: The earliest and most certain diagnosis of the disease by culture, and by inoculation of lower animals. To-day I made cover-glass preparations of the bacillus of glanders of the third generation, and the second of culture in the laboratory.

I hope to be able to get away to Paris on Tuesday, where it will be possible to continue the same study under French methods. The object constantly in view, is to get such information as will be of most use in our laboratory and work at home.

Thursday afternoon I went, by invitation, with Mr. Murphy, Medical Officer of Health of the London County Council (who now have charge of them), to the sewage works at Barking. This is one of the two places where the sewage of London is discharged into the lower Thames with or without chemical treatment. At Crossness, the other station, works similar to those at Barking, are in process of building, so that but a comparatively small portion of the sewage discharging there is treated at all. At Barking, at mid-day, 200,000,000 gallons of sewage would represent the amount for 24 hours if at the same rate. The average is about 90,000,000.

Time for steamer mail and I must close.

C. N. H.



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
 SECRETARY'S OFFICE, RED WING, March 15, 1890.

Quarterly Supplement to Report on Vital Statistics, }  
 Fourth Quarter, 1889. }

NOTE.—In the following table of death causes

**Puerperal Diseases** includes *Puerperal Fever* and *puerperal septicæmia*.

**Diarrheal Diseases** includes *Diarrhoea*, *Cholera Morbus* and *Dysentery*, of over five years of age.

**Diarrheal Diseases of Children** includes intestinal diseases, under 5 years, during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tubes Mesenterica* *Hydrocephalus* and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we have been unable to classify.

**Not Classified** includes deaths from certain specified causes, not included in the report following.

See page 52 for comments concerning mortality from certain diseases.

STATEMENT OF BIRTHS—FOURTH QUARTER  
 OF 1889.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT QUARTER FILED IN THE  
 OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO  
 MARCH 15, 1890.)

GRAND TOTAL, 7603.		PER CENT.	TOTAL.	MALES.	FEMALES.	UN- KNOWN.
SEX.	Males .....	51.16	7603	3910	.....	.....
	Females .....	48.09	.....	.....	3657	.....
	Unknown.....	.75	.....	.....	.....	36
COLOR.	White .....	100.00	7603	3910	3657	36
	Colored.....	.....	.....	.....	.....	.....
	Unknown.....	.....	.....	.....	.....	.....
CONDITION.	Legitimate.....	99.53	7567	3895	3636	36
	Illegitimate.....	.47	36	15	21	.....
	Unknown.....	.....	.....	.....	.....	.....
NO. AT BIRTH.	Single.....	98.06	7455	3820	3598	36
	Twins.....	1.94	148	89	59	.....
	Triplets .....	.....	.....	.....	.....	.....
	Unknown.....	.....	.....	.....	.....	.....
PARENT NATIVITY.	Both American.....	26.69	2029	1056	963	10
	Both Foreign.....	55.32	4206	2156	2028	22
	Am.Father—Foreign Mother..	4.84	367	190	175	2
	Foreign Father—Am.Mother..	10.99	836	432	403	1
	Unknown.....	2.17	165	76	88	1



rage for the quarter.

[illegible]

835	...	1190	509	122	24	495	73	51	42	44	114	56	52	188	136	101	127	155	123	53	22	633	192	327	647	36	319	1094	36	82	304	...	...
	1503	932	410	156	5	371	94	50	30	32	123	62	73	157	113	68	98	87	89	46	10	542	200	282	460	19	305	916	29	70	138	...	...
835	1503	2112	919	278	29	868	167	104	72	76	237	118	125	345	249	169	225	242	212	99	32	1175	392	609	1107	55	624	2010	65	152	487	...	...

## MINNESOTA.

MORTALITY IN THE FOURTH QUARTER OF 1888 AND 1889 BY MONTHS,  
QUARTERS AND YEARS.

	Year.	DEATHS BY MONTHS.			DEATHS BY QUARTERS.											
		October.	November.	December.	First Quarter.			Second Quarter.			Third Quarter.			Fourth Quarter.		
					Total.	Localities Invaded.*	Counties.	Total.	Localities Invaded.*	Counties.*	Total.	Localities Invaded.*	Counties.*	Total.	Localities Invaded.*	Counties.*
Total from all Causes .....	{ 1888 1253 1094 1196 3815							3605			3692			3543		
	{ 1889 1204 1100 1034 3464							2983			3071			3338		
Measles .....	{ 1888 8 8 17 29 7 5 114 21 16 33 8 7 33 9 9															
	{ 1889 4 7 7 89 24 19 59 16 13 23 7 6 18 5 5															
Scarlatina.....	{ 1888 16 22 15 43 8 7 30 6 6 16 4 4 53 11 9															
	{ 1889 13 16 25 85 20 16 109 22 17 47 10 9 54 13 12															
Diphtheria .....	{ 1888 100 88 86 245 40 27 155 25 19 180 29 23 274 38 27															
	{ 1889 116 110 78 208 31 21 190 27 22 92 15 12 304 39 29															
Croup .....	{ 1888 21 24 31 72 17 13 45 11 10 33 10 9 76 15 12															
	{ 1889 31 31 32 72 18 16 39 11 9 25 6 6 97 19 15															
Typhoid Fever ..	{ 1888 136 73 52 128 21 18 88 17 16 176 23 19 261 36 28															
	{ 1889 96 76 65 91 26 15 70 14 13 119 17 14 237 45 31															
Diarrhoeal Disease of Children.....	{ 1888 82 25 19 24 4 4 29 7 7 836 69 44 126 20 16															
	{ 1889 87 21 14 51 9 8 109 11 10 749 95 48 122 24 19															
Phthisis.....	{ 1888 97 74 93 322 63 39 322 65 40 330 65 41 264 57 37															
	{ 1889 98 89 79 297 64 43 288 57 34 225 44 32 266 50 34															
Bronchitis.....	{ 1888 16 26 48 139 26 22 155 20 17 61 9 8 90 17 14															
	{ 1889 15 21 20 143 20 18 65 13 11 44 6 6 56 9 9															
Pneumonia and Pleurisy.....	{ 1888 73 76 96 316 54 33 326 51 35 112 22 22 245 49 33															
	{ 1889 43 65 52 359 75 44 192 39 23 69 11 11 160 32 25															

\*Average for the quarter.

Total for 1888 corrected up to May 1, 1889. Totals for first three quarters of 1889 corrected up to November 15, 1889, and for the last quarter up to March 5, 1890.

*Measles.*—Shows a steady decrease in mortality compared by quarters for 1889. Comparing the last quarter of 1889, with that of 1888, the mortality and distribution is nearly one-half less.

*Scarlatina.*—Comparing the year 1889 with 1888, mortality and distribution have been greater in each quarter and comparing the last quarter of 1889, by months, shows a steady increase.

*Diphtheria.*—In 1888, mortality decreased during the first two quarters when it began a rise and was the greatest in the last quarter. In 1889 mortality decreased through the first three quarters—very marked in the third. But a very decided increase occurred in the fourth, the greatest number of deaths occurring in this quarter, the same as in 1888.

*Croup.*—Mortality greatest in the first and fourth quarter of 1888 and 1889, reaching the highest point in the fourth quarter of each year.

*Typhoid Fever.*—Comparing 1888 and 1889 as a whole the mortality in 1889 is much less. This is also true comparing these years by quarters.



# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

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VOL. VI. NO. 2.

APRIL, 1890.

WHOLE NO. 62

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF MARCH, 1890.

DISEASES OF MEN.

Diphtheria.....	}	cases, 38
		deaths, 12
Scarlatina.....	}	cases, 36
		deaths, 5

DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	11
Reported during the month.....	10
Killed.....	10
Released.....	3
Isolated.....	0

Remaining April 1st, 1890, isolated or not accounted for..... 8

NOTE.—Most of these are cases exposed, and isolated for further observation.

DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA  
FOR THE MONTH OF MARCH, 1890, REPORTED UP TO APRIL 20.

(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)  
Total number of deaths 864, against 859 last month, and 1,091 for the corresponding month of 1889; 454 males, 410 females; 51 per cent occurred in cities of more than 2,000 population. Ages, under one year, 29.63 per cent; between 1 and 5 years, 10.30 per cent; 5 and 15 years, 7.87 per cent; 15 and 30 years, 13.54 per cent; 30 and 50 years, 15.27 per cent; 50 and 70 years, 12.96 per cent; over 70 years, 10.43 per cent.

*Measles*—3 deaths, males, in 3 localities, 3 counties, 2 in cities. Ages, 2 under 1 year, 1 between 1 and 2 years.

*Scarlatina*—9 deaths (3 males, 6 females), in 9 localities 9 counties; 33 per cent occurred in cities. Ages, 44 per cent under 2 years; 44 per cent between 5 and 10 years; 12 per cent between 10 and 15 years. Mortality and distribution same as last month, but only about one-third compared with the same month of 1889.

*Diphtheria*—37 deaths (18 males, 19 females), in 22 localities, 20 counties; 46 per cent occurred in cities. Ages, under 5 years, 46 per cent; between 5 and 10 years, 32 per cent; over 10 years, 22 per cent. Mortality slightly less than last month, but distribution about the same. Compared with corresponding month of 1889, mortality and distribution much less.

*Croup*—9 deaths (4 males, 5 females), in 7 localities, 7 counties; 44 per cent occurred in cities. Ages, under 2 years, 66 per cent; between 5 and 10 years, 34 per cent. Mortality same as last month, and one-half compared with same month last year.

*Typhoid Fever*—11 deaths (8 males, 3 females), in 10 localities, 9 counties; 45 per cent occurred in cities. Ages, between 5 and 15 years, 18 per cent; between 15 and 30 years, 63 per cent; between 50 and 60 years, 19 per cent. Mortality less than last month, and only one-third compared with same month last year.

*Diarrhoeal Diseases of Children*—17 deaths (9 males, 8 females), in 8 localities, 8 counties; 76 per cent occurred in cities. Ages, all under 2 years. A slight increase in mortality compared with last month, and the same month last year.

*Bronchitis*—21 deaths (12 males, 9 females), in 11 localities, 9 counties; 52 per cent occurred in cities. Ages, under 3 years, 80 per cent. Mortality increased slightly, compared with last month, but only about one-half compared with corresponding month of 1889.

*Pneumonia*—72 deaths (41 males, 31 females), in 37 localities, 32 counties; 56 per cent occurred in cities. Ages, under 5 years, 38 per cent; between 5 and 15 years, 4 per cent; 15 to 30 years, 9.7 per cent; between 30 and 50 years, 22 per cent; over 50 years, 26.3 per cent. Mortality and distribution less than last month, and the same month last year.

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THE ANNUAL MAY SANITARY INSPECTIONS.—Sec. 4, Chap. 132, Gen'l Laws of 1883, requires that the Health Officer "make, once in each year, in the month of May, and oftener if necessary, a thorough sanitary inspection of said town, village, borough, or city, and present a written report of such inspection at the next meeting of the Board of Health, and he shall forward a copy of said report, as soon as rendered, to the State Board of Health.

When this number of PUBLIC HEALTH reaches its readers the time for this inspection will be close at hand. Local Boards of Health will be held to a stricter accountability than heretofore. In all our centres of population, including all but the smallest villages, these Boards have now been in operation for five years, under the existing law. There can be no plea of ignorance of its requirements, for the law, and the circular on Sanitary Inspection, have been freely distributed from this office, to every Board, and the Secretary has written, when asked, or when the facts in his possession required.

Much of the lack of thoroughness heretofore, was due to the lack of careful preparation before the inspection was begun.

Notice, by special circular, if possible, should be served on every householder, and occupant of store, warehouse, shop, or other building, from which nuisance or danger to public health may come. State the law and the requirements of your Board, when the inspection may be expected, and that penalties will be enforced, if, after due notice, the law and your instructions are not complied with. It should be distinctly stated in the notice, that the object of the measure is the prevention of sickness, infectious disease, and the removal of common nuisances. The greatest good of the greatest number, in the matter of health, is the real motive and should be clearly understood.

There are certain essentials of healthy living which are so plainly the right of every man, woman, and child, that the State has provided ways for all to secure and preserve that right, if they will. But experience has taught, at a fearful cost of suffering, life, and money, that the individual, even if he try, has little show of success against combinations of others. "Business is business" means with the average a disregard of the health and happiness of others, if they interfere with profits, and nothing but legislation and fearless and independent execution of the law, will serve to mitigate the evil which cannot be entirely prevented, as a little reflection will show. One of the most important and powerful, of the agents of the State for the work referred to, is the Local Board of Health.

But what are the essentials above referred to? They are these: Pure and abundant air; pure and abundant water; abundant sunlight, and sufficient clothing, which last includes the shelter of a house. It will be seen that, in a state of nature, God has provided, at least the air, the water, and the sunlight, but that in proportion as men advance in arts and culture, concentrate in centres of population, and engage in trades or professions, (as is now the growing fashion,) these essentials come to have an increasing money value, in fact are not attainable, in abundance, except at such expense and trouble as to make them luxuries.

That they are essential to health and well-doing, every sanitary act and law testify, as does the common experience of every one. There will, therefore, be no dispute of our present contention, that their abundant supply is the chief duty of Boards of Health? But how? First, by careful, and system-

atic, survey of your district, be it township, village, or city. The May inspection is the first of these for the year, and in proportion to its thoroughness will be the knowledge of what is to be done. We ask a study of the circular, which is a part of this number, particularly as to the method and record of the survey.

THE LAST RULES ADOPTED AS TO INFECTIOUS DISEASES OF CHILDREN IN FRENCH SCHOOLS.—I translate from the *Semaine Medicale* the following as of interest to sanitary authorities at home and as showing that our rules are no more stringent than these which represent the opinions of the leading sanitarians of France. The order is through the Minister of Public Instruction, and is addressed to those in charge of the "Primary Schools:" PRECAUTIONS TO BE TAKEN WITH RESPECT TO CHILDREN ATTACKED BY CERTAIN INFECTIOUS DISEASES! Each time that the absence of a child shall be occasioned by one of these diseases, to-wit: Small pox, measles, mumps, etc., the teacher ought not to admit the child till satisfied that the period of isolation is past. This period should be counted from the beginning of the disease. It is forty days for small pox, scarlatina and diphtheria, and twenty-five days for measles and mumps. As to whooping cough as the duration of the disease varies exceedingly, children having had it are to be admitted on certificate of the Physician Inspector of schools, or if there be none, of the attending physician, that the child has been well one month. C. N. H.

SUSPECTED SMALL POX IN CEDAR LAKE TOWNSHIP, SCOTT COUNTY.—This disease was first reported March 25, by telegraph from New Prague, seven cases having been suspected in two families, all children. This Board immediately telegraphed for facts. The Health Officer replied that the cases were in Cedar Lake Township, Scott County. March 27, this Board employed a physician to visit this town, (the Health Officer being ill at the time,) investigate the disease, and instruct the Local Board. He met the Local Board of Health and informed them of their duties in cases of this kind, but did not see the cases. After receiving this report, and not being satisfied that the disease was really small pox, as only children were affected, this Board employed Dr. J. B. Dunn, H. O., of Shakopee, to visit and diagnose the cases, as he had had experience with small pox in the outbreak of 1884, under our observation. The following is his report:

SHAKOPEE, Minn., April 2, 1890.

Dr. Franklin Staples,

Acting Secretary State Board of Health, Red Wing, Minn.,

DEAR DOCTOR: I received your letter on Monday, the 31st ult., too late to take train to New Prague, and so took team from here. This would have been best in any case, as the families lived some six miles apart, and there is no livery except one pair of ponies in New Prague, and no certainty of their being at hand when wanted. I visited J—C— family the first day and found the following to be the facts: One child, a girl, about eleven years old, was taken sick about ten days before I called, was sick three days, when some sort



of an eruption appeared; this had wholly disappeared when I saw her, seven days later. I cannot say just what the nature of this eruption may have been but there are discolorations on the skin showing that it was present. I think from the appearance of the skin that the eruption appeared in patches or successive crops, and was probably varicella, but the children all had scabies very badly, and had scratched and torn the skin up so badly as to make it almost impossible to find any marks as they would have been in another case. Three days after the first one was taken sick, a second child was taken sick, and is still sick, and has scabies complicated with pustular eczema. This is the child that the doctor saw *through the window* and supposed had small pox. There was still a third child sick which had no eruption at all and has not been well for a long time. Mr. K—— family lives some five or six miles from Mr. C——, and have not had any communication, whatever, with them. I visited Mr. K—— family April 1, and found that they are all well and none of them have been sick. I am certain that I visited the right family, for I found a small notice, posted on a part of the barn not very likely to be seen, stating that small pox existed in this family. I did not see the notice until my attention was called to it by the woman who lived there. At —— I did not find the notice at all, but Mr. Johnston told me that one had been put up on a tree some distance away. Mr—— told me that a doctor had come from New Prague and looked through the window but did not go into the house. I was unable to learn how the report came to be circulated.

Yours truly,

J. B. DUNN, M. D.

#### CORRESPONDENCE OF THE SECRETARY.

##### LETTER NO. 9.

DUSSELDORF, Prussia, Sunday, March 23, 1890.

I AM not quite sure where I wrote my last letter to PUBLIC HEALTH, or of its subject. I have traveled quite rapidly on the continent, and have, beside, been the victim of the results of influenza, which attacked me in London, and has left me so susceptible to changes of temperature that I am quite ashamed of the care I have been compelled to take to avoid converting a persistent and distressing cough into deeper and more serious trouble. Despite what care, attending to my work, permitted me to take, I have been "laid up" wholly two or three days, and have had great difficulty in doing a half day's work when I should have done a whole one with ease. I have no difficulty now in understanding the reports I have heard, and read, of the variety and persistence of the affections which have followed that curious disease, both here and at home. So much as apology for any lack of matter or style which those interested enough to read these letters, may find.

I think my last letter ended abruptly while describing my visit to the works at Barking, for the precipitation of some of the dissolved and suspended matters of the London sewage, before it is permitted to flow into the Thames. This removed matter called "sludge" is about the consistence of thin mud, and in that form is pumped into ships built for the purpose, which when loaded, go out to sea and discharge their cargoes into the ocean, where, as a nobleman supporting the method, once said they "serve for phosphatic food for the fish,

who in turn again supply that necessary nerve food in their own bodies to the population of London." This is the idea though I may not give the exact language. Hardly a reliable argument for this mode of disposing of sewage. One can have no idea of the feeling which is mixed up with the discussion of this question of sewage disposal in London, not only in the municipal bodies but among scientific men to whom it has been referred, or who have other occasion to discuss it. All which makes it difficult for one whose only object it is to learn the truth for "home consumption," (if I may so express it,) I will not therefore allude to it further here but shall bring back all the data I can collect, not only as to London practice but as to the most valuable of the various experiments now making, and which have been made in England, and the continent in the same direction. These are more numerous than I had supposed so that it will be impossible to visit more than a few of them all, but shall try to get plans and results of most of them.

Arrived in Paris early in February, and the change in a sanitary sense is as great as in any other. The water supply of Paris is intended to be of two sorts, one for drinking and domestic use, from sources other than the Seine, and for street washing, fountains and the like, from the Seine itself. For this last purpose, anyway, the supply is profuse, and the most public streets are models of cleanliness. There is a sewer system but only partially adapted to the disposal of domestic sewage, where, in the majority of cases, what we know as the "cesspool," in some of its various forms, generally close to, or under, the house, still serve till they can be replaced. Was informed that the process of change is going on, and all new houses must have sewer connections. Have the data but not here. Needless to describe "the *great* sewer system" of Paris, to which this domestic connection is still largely wanting, but will state that it is adapted to receive, and care for, all the sewage of whatever sort, when proper connections are made. This great system, with the exception of the part on the Isle of St. Louis, (the old city,) is now shut off from the Seine as it flows through the city, and about one-fifth is disposed of on, the now, famous sewage farms in the village of Gennevilliers, the rest going into the river lower down. Visited those farms with an engineer officer detailed by the courteous chief of this department, and was met by the engineer in direct charge and the superintendent of the model farm.

As details will be given later, it is only necessary to state here that the best proof of the success of these farms is the great increase in the value of the lands which before were of no agricultural use but which, with even this dilute sewage, now produce crops worth hundreds of dollars from an acre. One noticeable fact was the constant supervision of the distribution by the officials in charge as that use is regulated and abuse reduced to a minimum. All the channels for the distribution of the sewage on the farms, (or rather *gardens*, would be a better name,) is by simple ditches in the soil so arranged that the position of all but the leading ones is easily changed with a hoe. The larger ones are on sodded embankments, a little higher than the others, but still only in the sod and easily managed and kept clean. This is not the season to judge of the possible offense by ammoniacal odors, but it is easy to see that if the distribution is as rapid as was told, in warmer weather, there need be no offense. No objectionable features were discovered which common sense and

very moderate skill could not overcome, and the water flowing from gardens on which the sewage was seen to be in larger use was to nose, eyes, and taste, a capital water except that there was the taste often found in artesian waters at home, due to more than, perhaps, five or six grains of common salt to the gallon. It does not affect the purity of the water, and a good, large goblet was drunk with relish. The system is to be extended, if possible, this year, land having been obtained and the plans ready for execution. So far as it goes, and that is a good way, this experiment has been subjected to more severe scientific and popular criticism than any other whose history I now know, and the result has been to collect a very valuable mass of facts not only as respects this, but other like experiments, which throws a helpful light on a subject which needs *facts* rather than theories.

Cultivation has already begun on the farms. Some of them are used as "truck" gardens, others as "nurseries," for plants, shrubs and smaller trees. The population is increasing and an examination of the vital statistics of the district gave no indication of more than a very moderate prevalence of diseases usually associated with a foul soil. The soil is, of course, well drained and the well water in use show no indication in analysis, of an abnormal presence of organic matters, judging by the official reports.

Having had no time to study the voluminous literature of the matter, one can only judge from what was seen and heard, and the conclusion is favorable. No evidence of fraud, or a disposition to conceal anything, was discovered, on the contrary an amount of courtesy and patience, for which hearty thanks are due.

Perhaps this subject occupies too much space, but the writer is sure that it is worth it, and that many readers who have been confused by conflicting statements as to the Gennevilliers experiment as he was, will be glad to get this statement of the matter.

I visited the Institute of Pasteur, was courteously received, and given every opportunity to see the great Frenchman and his work. He needs no description. His institute is a fine building exactly adapted to its varied purpose as a place for the use of the antirabic vaccination; for the culture and preparation of the virus; for the instruction of pupils, and to furnish all facilities for original research in various departments of bacteriology. The public rooms are on the ground floor of one wing. They are reception rooms, operating rooms, a small lecture room, etc. The virus or special organic poison of rabies has never been isolated, nor is any bacterium known to be associated with it, or to produce it. It is necessary, therefore, to use some organic substance from an infected animal which contains it. Experiment resulted in the selection of the spinal cord of a rabbit, dead by inoculation with the spinal cord of a dog killed by the disease. The virus is now, regularly, propagated from rabbit to rabbit, and on February 20, I saw the brains and spinal cords of rabbits, 242 and 243, of this succession removed for this purpose. I cannot detail the operation here, but may state that all is done antiseptically. The spinal cords are reserved for the human subjects, a portion of the brain is used to inoculate the next rabbit, (in this case Nos. 344-345.) This is done by elevating a portion of the skull and injecting a portion of the brain of a rabbit, dead of the disease, under the membranes of one to whom, in this way, the disease is to be given. The animal is chloroformed and the wound is dressed antiseptically. The

cords, for human use, are kept in sterile glass jars, hanging by a thread from the sterile cotton plug which closes the mouth of the jar. In the bottom of the jar is some caustic potash. For human use a small portion of the cord is ground to an emulsion with sterile distilled water and, perhaps, thirty drops of this is, by a syringe, like a hypodermic, injected under the skin—as I saw—just above the hip.

The cords are found to lose their virulence so rapidly that one, fourteen days old, is the feeblest used for this purpose. The proceeding then for the use of this "spinal cord culture of Rabies" is as follows, with exceptions needless to mention here: The first day the patient gets the fourteen days' old virus; second day thirteen days' old virus, and so on till at the end of the second week he gets virus which would surely kill a dog, a rabbit, or a man, had he not undergone this process of becoming gradually accustomed to the poison, by gradually increasing doses. This is the rough statement of the operation and its theory. The result has been a very large decrease in the mortality from this dreaded and hitherto hopeless disease. Not all that are bit by mad dogs die of Rabies, but for those who are to die if not aided there had hitherto been no hope of cure. Statistics sufficient for deduction have now accumulated for this method and the conclusion seems irresistible that it is a very encouraging success. It was a great pleasure to see Pasteur among the patients, and to note his almost fatherly attentions to the little children, and his evident anxiety that all should go well. I was even more interested in the bacteriological work respecting diphtheria, which has been done in the laboratory by Roux and Yersin, but this work was at a stand still then, and the final paper was promised in March. Yersin showed me some cultures and microscopic preparations, and went a little into the subject. I did not see any greater facilities for bacteriological work than may be had in London, except as to rabies and charbon.

This rambling letter is longer than I intended, but I have so much material on hand of interest that it is difficult to know what is best to relate. "Take the will for the deed."

C. N. H.

THE REGULATION OF SLEEP.—Insomnia is rightly regarded as one of the marks of an overwrought or worried nervous system, and conversely we may take it that sound sleep lasting for a reasonable period, say, from six to nine hours in the case of adults, is a fair test of nervous competence. Various accidental causes may temporarily interfere with sleep in the healthy; but still the rule holds good, and a normal brain reveals its condition by obedience to this daily rhythmic variation. Custom can do much to contract one's natural term of sleep, a fact of which we are constantly reminded in these days of high pressure; but the process is too artificial to be freely employed. Laborious days with scanty intervals of rest go far to secure all the needful conditions of insomnia. In allotting hours of sleep it is impossible to adopt any maxim of uniform custom. The due allowance varies with the individual. Age, constitution, sex, fatigue, exercise, each has its share of influence. Young persons and hard workers naturally need and should have more sleep than those who neither grow nor labor. Women have by common consent been assigned a longer period of rest than men, and this arrangement, in the event of their doing hard work, is in strict accord with their generally lighter physical construction and recurrent infirmities. Absolute rule there is none, and it is of little moment to fix an exact average allowance provided the recurrence of sleep be regular and its amount sufficient for the needs of a given person, so that fatigue does not result in such nerve prostration and irritability as render healthy rest impossible.—*The London Lancet*.



# PUBLIC HEALTH

## IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

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MAY, 1890.

WHOLE NO. 63

INFECTIOUS DISEASES REPORTED DURING THE MONTH OF APRIL, 1890.

### DISEASES OF MEN.

Diphtheria.....	}	cases, 58
		deaths, 37
Scarlatina.....	}	cases, 16
		deaths, 0

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	8
Reported during the month.....	5
Killed.....	3
Released.....	0
Isolated.....	2

Remaining May 1st, 1890, isolated or not accounted for..... 10

NOTE.—Most of these are cases exposed, and isolated for further observation.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA  
FOR THE MONTH OF APRIL, 1890, REPORTED UP TO MAY 20.

(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)

Total number of deaths, 842; 450 males and 392 females; 56 per cent occurred in cities of more than 2,000 population. Ages, under 1 year, 29.69 per cent; between 1 and 5 years, 10.57 per cent; 5 and 15 years, 7.84 per cent; 15 and 30 years, 13.65 per cent; 30 and 50 years, 14.84 per cent; 50 to 70 years, 11.16 per cent; over 70 years, 12.25 per cent.

*Measles*.—5 deaths (1 male, 4 females), in 3 localities, 3 counties; 3 occurred in cities. Ages, 60 per cent under 3 years.

*Scarlatina*.—9 deaths (5 males, 4 females), in 5 localities, 5 counties; 66 per cent occurred in cities. Ages, under 5 years, 77 per cent; between 5 and 10 years, 23 per cent. Mortality same as last month, but distribution less. Compared with same month last year mortality only one-fifth.

*Diphtheria*.—28 deaths (19 males, 9 females), in 13 localities, 13 counties; 60 per cent occurred in cities. Ages, under 5 years, 53 per cent; between 5 and 10 years, 32 per cent; between 10 and 15 years, 7 per cent; over 15 years, 8 per cent. Mortality and distribution less than last month, and not one-half compared with the same month last year.

*Croup*.—4 deaths (1 male, 3 females), in 4 localities, 4 counties; 50 per cent occurred in cities. Ages, 75 per cent under 2 years; 25 per cent between 4 and 5 years. Mortality and distribution about one-half compared with last month.

*Typhoid Fever*.—18 deaths (8 males, 10 females), in 10 localities, 10 counties; 61 per cent occurred in cities. Ages, under 5 years, 11 per cent; between 5 and 15 years, 33 per cent; between 15 and 30 years, 22 per cent; between 30 and 50 years, 22 per cent; over 50 years, 12 per cent. A slight increase in mortality compared with last month, but less than same month last year.

*Diarrhoeal Diseases of Children*.—10 deaths (5 males, 5 females), in 7 localities, 7 counties; 70 per cent occurred in cities. Ages, 80 per cent under 1 year; 20 per cent between 1 and 2 years. Mortality and distribution less than last month, but the same compared with corresponding month of 1889.

*Bronchitis*.—29 deaths (17 males, 12 females), in 9 localities, 9 counties; 86 per cent occurred in cities. Ages, 82 per cent under 1 year; over 30 years, 18 per cent. A slight increase in mortality compared with last month.

*Pneumonia*.—60 deaths (39 males, 21 females), in 36 localities 31 counties; 56 per cent occurred in cities. Ages, under 1 year, 18 per cent; between 1 and 5 years, 15 per cent; between 5 and 15 years, 16 per cent; between 15 and 30 years, 8 per cent; between 30 and 50 years, 21 per cent; over 50 years, 22 per cent. Mortality and distribution less than last month, and the same month of last year.

TO CORRESPONDENTS AND REPORTERS.—We desire to impress upon you the imperative necessity of naming the *township and county* in your reports to this office. Especially is this needed when you report concerning some village, borough or city *not incorporated*. In this case the Board of Supervisors (Local Board of Health) of the town in which such village, borough or city is situated have jurisdiction. Considerable trouble has been occasioned by simply naming the station where infectious diseases exist, without naming the township, and our maps do not always show the exact location by townships of such stations, and we are therefore in doubt as to the Board having authority.

#### CORRESPONDENCE OF THE SECRETARY.

LETTER NO. 10.

THE STATISTICS OF THE INSTITUT PASTEUR, IN PARIS, IN THE TREATMENT OF 7,919 CASES OF RABIES, IN THE YEARS 1886-87-88-89.

INSTITUT PASTEUR, PARIS, April 25, 1890.

I DO not think I can better occupy the space assigned to my correspondence to PUBLIC HEALTH IN MINNESOTA, than by a brief abstract of the very interesting and important paper "Les Vaccinations Antirabique a l'Institut Pasteur. Resultats Statistiques 1887, 1888, 1889, par M. L. Perdris."

I have taken pains to examine the records, reports and correspondence, upon which this paper is founded, and am very glad to be able to state that I have never examined any method of record more carefully, and that I find the most painstaking and patient investigation, and thoroughly scientific methods, to be in daily use. Since I have been here I have watched every detail of the entire work, for which every facility has been afforded me.

So much has been written about the work of Pasteur and his staff of assistants in the matter of the treatment of rabies, which was "second hand," if I may so state it, that I am sure my report of what I have *seen* and *know* will have sufficient value to justify its publication. I am the more bound to do this because I returned to Paris by order of the Governor, and the President of the State Board of Health, to learn this method of treating rabies, and to be prepared to begin its use in our State if it should be found to be practicable and advisable. I have made the study required and have the promise of every assistance here necessary to the work.

The statistics of the work of the Pasteur Institut in Paris, include all the cases treated in the years 1886-87-88-89, without exception. They are arranged in two principal tables. In the first the calendars of mortality includes only persons who have died of rabies more than fifteen days after the last day of treatment. This is because it is proven that animals inoculated with rabies under the membranes of the brain (the dura mater), after opening the skull (trephining), pass about fifteen days before taking rabies, and so it is thought that in persons who manifest symptoms of rabies within fifteen days after the vaccination, the virus began its development during the treatment.

YEAR	CLASS A			CLASS B			CLASS C			TOTAL		
	No. Treated	Dead	Mortality, per cent	No. Treated	Dead	Mortality, per cent	No. Treated	Dead	Mortality, per cent	No. Treated	Dead	Mortality, per cent
1886	231	3	1.30	1926	19	0.99	514	3	0.58	2671	25	0.94
1887	357	2	0.56	1156	10	0.86	257	1	0.39	1770	13	0.73
1888	402	6	1.49	972	2	0.24	248	1	0.40	1622	9	0.55
1889	346	2	0.58	1187	2	0.17	297	2	0.67	1830		
Totals	1336	13	0.97	5241	33	0.63	1316	7	0.53	7893	53	0.67

Class A includes persons bitten by an animal in whom the disease is proven to exist by the development of rabies in an animal bitten by it, or inoculated with a portion of its brain.

Class B includes persons bitten by an animal certified by a competent veterinary surgeon to have been mad.

Class C, persons bitten by animals suspected to have rabies.

The above table is believed to justify the following conclusions:

First—The proportion of the dead, after this treatment, is very small (53 in 7893 persons treated, i. e. 0.67 per cent.)

Second—The mortality has diminished year by year, e. g.: In 1886, 0.94; 1887, 0.73; 1888, 0.55; 1889, 0.33. This diminution continues, and is due to a more accurate appreciation of the gravity of the wounds, and to a better application of the treatment.

Third—The number treated during the last three years was 5,222, of whom 802 (15 per cent) are in Class C, and though rabies was not certified to by a physician or veterinary surgeon, the evidence furnished by those interested, and by the character of the wounds justifies the inference that in two-thirds of

the cases the animal inflicting the wounds was mad. But excluding this class, and taking only classes A and B, the statistics are as follows:

Year	Treated	Dead	Mortality, per cent
1886	2157	22	1.02
1887	1513	12	0.79
1888	1374	8	0.58
1889	1533	4	0.26

Totals, 6577 46 Average, 0.70

It will be seen that the mortality here differs very little from the average of the first table, where the mortality in Class C is 0.57 per cent, about two-thirds of the total mortality (0.67 per cent.)

Fourth—But, to avoid any criticism, here is a table which includes *all* persons dead of rabies after the end of the treatment, even though the disease appeared the next, or succeeding, day after the last inoculation.

YEAR	CLASS A			CLASS B			CLASS C			TOTAL		
	No. Treated	Dead	Mortality, per cent	No. Treated	Dead	Mortality, per cent	No. Treated	Dead	Mortality, per cent	No. Treated	Dead	Mortality, per cent
1886	333	5	2.15	1931	24	1.24	518	7	1.35	2682	36	1.34
1887	357	2	0.56	1161	15	1.29	260	4	1.54	1778	21	1.18
1888	403	7	1.74	974	4	0.41	248	1	0.40	1625	12	0.74
1889	348	4	1.15	1188	3	0.25	298	3	1.00	1834	10	0.54
Total,	1341	18	1.34	5254	46	0.88	1324	15	1.13	7919	79	1.00

It will be seen that the general results agree with those of the previous tables. One result, particularly, merits attention, the mortality (1.13 per cent) of Class C is greater than the general mortality (1.00 per cent). This fact is explained when we recall the other fact that often when persons are bitten by an unknown and suspected dog, they make efforts to find it, and delay coming for inoculation ten, fifteen, and often more, days, after the bite. The disease has begun its evolution before the treatment, and the first symptoms of rabies appear in the days just after the inoculations before these have had time to take effect.

*Character and location of bites as affecting treatment and mortality.* The following table exhibits these facts:

LOCALITY OF THE WOUNDS.	CLASSES A & B			CLASS C.			TOTAL		
	No. Treated.	Dead	Mortality, per cent.	No. Treated	Dead	Mortality, per cent	No. treated	Dead	Mortality, per cent
1 Head and face, -	593	14	2.36	79	1	1.27	672	15	2.32
2 Hands, -	3768	26	0.69	619	3	0.48	4387	29	0.66
3 Extremities & body	2216	6	0.27	618	3	0.48	2834	9	0.32
Totals, - -	6577	46	0.70	1316	7	0.53	7893	53	0.67

It shows, clearly, these facts: Taking classes A and B, the general mor-



tality was: First, in the head, 2.36 per cent; second, in the hands, 0.69; third, on the limbs and body, 0.27. A very clear demonstration by statistics of what experience had already taught, that wounds of the head are particularly serious.

The usual treatment covers fifteen days; but in cases of this kind M. Pasteur has extended it to about twenty days. The gravity of the head wounds is due to the fact that the rabie virus has but a short ways to go to the brain or to the upper part of the spinal chord. This class of wounds furnishes nearly all those who have taken rabies during the treatment. And if we compare the character of the wounds which caused rabies within fifteen days after the treatment, we get the following: 12 out of 684 (about 1.75 per cent), were bitten in the head; 9 out of 4391 (about 0.20 per cent), were bitten in the hands; 5 out of 2839 (0.17 per cent) were bitten in the extremities. I need not give the statistics of the use of caustics and actual cautery before treatment. None were of any use. The nationality of persons treated here is as follows:

YEAR	FRENCH			OTHER THAN FRENCH			TOTAL		
	No. Treated	Dead	Mortality, per cent.	No Treated.	Dead	Mortality, per cent	No Treated.	Dead	Mortality, per cent
1886	1923	16	0.83	748	9	1.20	2671	25	0.94
1887	1425	8	0.56	345	5	1.45	1770	13	0.73
1888	1505	9	0.60	117	0	0	1622	9	0.55
1889	1497	5	0.33	333	1	0.30	1830	6	0.33
Total	6350	38	0.60	1543	15	0.97	7893	53	0.67

The proportion of death is nearly the same in 1889 for foreigners as for Frenchmen, because most of the first come from England and Belgium as quickly as from the interior of France.

I conclude this abstract by the statistics of the relation of the number of cases to the season. They are based on the French cases treated in 1887-88-89. I need not reproduce the diagram, but give the results. The conclusions are the same for each of the years.

The disease is at the maximum of prevalence at the end of winter and the beginning of spring (May).

The number of cases diminishes in July, in June and July, is least in September and October, to increase again in February.

These are flat contradictions of the current opinion. I know no American statistics to compare them with.

The facts as given in this paper certainly justify the belief that Pasteur's method offers the best known treatment for the control of rabies. It is no longer a matter of speculation but of clean, calm, scientific deduction from a long series of careful experiments and years of as careful observation of the treatment in daily use, and in the most public manner, and upon now, more than 8,000 persons bitten by animals suffering from rabies, with a mortality of not more than one per cent.

I need not go into details here, which will be found in the final report to the State Board of Health after my return.

PARIS, May 5, 1890.

CHARLES N. HEWITT.

## LETTER NO 11.

LONDON, Wednesday, May 7, 1890.

RETURNED from Paris day before yesterday, and my first business was to call on Dr. Buchanan and get the facts, as to the reported advent of cholera (by a British ship through the Suez canal from India) into the port of Bordeaux, France. I suppose the report current in France at the time that she had cases of cholera on board when she reached Bordeaux, and that she was forbidden entry at Falmouth, England, was published in the United States. It would naturally occasion alarm, and a strong feeling that the most simple and reasonable precautions were neglected by the English authorities in the matter of preventing the carriage on ship-board of this dreaded disease from India to Europe. Dr. Buchanan, the medical officer of the Local Government Board, very promptly and kindly read me the official and other information which he has on the subject. I append the memorandum which he gave me to this letter. From this and the article in the *Times*, to which he refers, these are the facts: First—The English steamer, *Falfred*, had cholera on board on her *outward* voyage to India. On that account she was compelled, on her return voyage, to come through the Suez canal in quarantine. The English Consul telegraphed the fact of her being in quarantine, for the reasons given above, to the Local Government Board, and that Board made full inquiry and found that no evidences of cholera subsequent to the outbreak on the outward voyage could be heard of. She was not ordered off Falmouth by the Board as she did not report in port at all but was ordered by those having control of her to Bordeaux. Why, I understood Dr. Buchanan, he did not know on her arrival at Bordeaux she was promptly taken in hand by the Local Sanitary Authorities, and by them reported to the French Government, for whom Dr. Proust, the chief sanitary inspector reported, "No cholera on board," and after a few days' delay and disinfection she was allowed communication with shore, and so cleared of suspicions of importing the cholera.

I have given these details to illustrate the methods now in use in Europe in dealing with this dreaded disease. Those who are familiar with the marked changes which have taken place in the methods of dealing with cholera by what has so long been called quarantine (forty days' detention and absolute isolation was, as the name implies, the original rule) know that now it is not the rule except in a very restricted sense. It is a practical agreement that cholera cannot be controlled in this way. Still every effort is made to be fully informed of the disease, outside the country where it is never absent. This is very difficult to do even when reliable agents are kept in the adjacent territory. Neither the Turk or the Persian or the Mesopotamian are to be relied on to tell the truth when it will surely effect their business in their annual pilgrimage. So far as the authorities here are able to tell the disease seems spreading towards the Black Sea, and it has probably gotten beyond the northern boundary of Mesopotamia. It spreads so slowly that it is very difficult to say what its march will be. The spread has generally been from Persian territory towards the Caspian.

Prof. Pettenkofer told me, a few weeks ago, in Munich, that the seeds of the disease were in Russia, and probably had been for a long time, only needing proper conditions to begin their work. Amidst all the doubt and controversy

which has ever surrounded this matter of cholera, England has set the example of a very decided and frank statement of her policy and practice. Here is the statement of Dr. Buchanan, the medical officer of the Local Government Board, taken from his report, dated April, 1886, and which expresses the English rule of to-day: "The views of England, concerning cholera in Europe, are, that for European communities which have secured their soil, water and air against befoulment, there is little or no danger of cholera, no matter though the disease be actually brought into their midst. Whereas communities which have not obtained this result have to encounter an unknown and serious risk from cholera when it chanced to be introduced among them. \* \* \*

England puts her trust in measures which shall secure purity of earth, of water, and of air; this purity is sufficient to prevent the spread of cholera in a European community. And as the measure that shall protect herself and other countries from such danger as attaches to intercourse with already infected places and communities, England relies, and exhorts other countries to rely upon this same purity of local surroundings, as the means for rendering that intercourse inoperative for harm. Accordingly, England imposes no restriction upon intercourse with one and another community, town and town, or nation and nation. She is content with providing for the care of persons actually sick, and with obtaining the destruction of whatever may be harmful in the discharges from cholera cases; and for the rest she is satisfied that each community, at all events under European conditions, can if it please, render cholera harmless for itself; doing so by the adoption of practices which are profitable against other diseases, as well as against cholera. She would dispense, in land and sea traffic alike, with those detentions known as quarantines, having found them in practice to result rather in hazardous concealments and evasions than in any effectual exclusion of cholera. England imposes no quarantine whatever against cholera, upon any of the multitude of vessels which reach its shores from infected countries." There is no mistaking the meaning of this extract, and it is the policy of England to-day.

It must not be forgotten that England insists that every officer of customs if he have reason to suspect a ship infected with cholera, shall order the ship anchored in a proper place, prevent any person leaving the same; shall notify the local sanitary authority, and upon certificate of the medical officer of health that the ship is infected with cholera, the isolation shall continue till all sick of cholera shall have been removed to a proper place on shore; or if too sick to be removed, shall have recovered. All who are well when examined, are permitted to land on giving their names and destinations. All ailing and suspected of cholera by him, shall be detained on ship or in hospital for not more than two days to learn whether the illness is or is not cholera. All cases of cholera to be detained as above till well. All dead bodies from cholera must be buried out to sea, properly leaded to prevent rising, or on land as the medical officer of health directs. All clothing soiled by cholera discharges, must be destroyed, and clothing, bedding, etc., likely to retain infection must be disinfected or destroyed as he directs. The ship must be disinfected.

Particular attention is called here to the peculiar infectiveness of cholera, which *when local conditions assist*, can operate with terrible force and at con-

siderable distances from the sick. It is characteristic of cholera, in mild as in severe cases, that *all matters which the patient discharges from stomach and bowels, are, or can become, infective.*

Probably under ordinary circumstances, the patient has no power of infecting other persons, except by means of their discharges; nor any power of infecting even by them, except in so far as particles of them are enabled to taint the food, water, or air, which people consume. Thus when a case of cholera is imported into any place, the disease is not likely to spread unless in proportion as its fields locally open to it, contain facilities for spreading by *indirect* infection. This view of cholera and its management is gaining ground daily. It is very nearly, so far as conditions are similar, the position which our State Board of Health had always taken. *That to keep our soil clean and to protect our water supply, and do most to secure a pure air supply too, is not only to forefend cholera, but typhoid fever, cholera infantum, and other diseases, which are, for us, vastly more dangerous, and unlike cholera, always with us.* Let us take this lesson to heart this summer and do better work than we have ever done before in every township, village and city in the State.

I am very glad to be able to report that decided progress has been made in the study of the causes of diphtheria, and shall be able to present to PUBLIC HEALTH proof sheets of the paper to be read before the Royal Society on the 22d of this month, by Dr. Klein. Shall send it next mail. Am now studying the subject in his laboratory and shall be able to write, in some particulars, from my own observations there.

The three weeks spent in Institut Pasteur, in Paris, were devoted to a practical study of his treatment of persons bitten by mad dogs, of which I have carefully studied every detail, and shall bring with me material for beginning the work at home.

Had special instruction in the bacteriology of diphtheria, charbon symptomatique (black leg) of cattle, with a view to investigate a similar, or the same, affection, so fatal at times among cattle in Minnesota. All that has been learned in this matter here will be available for our health officers who choose to get it as soon as our laboratory can be gotten into shape after my return.

C. N. H.

MEMORANDUM—Copy of telegram to the Local Government Board from H. B. M., consul at Port Laid, March 23, 1890: "Steamer Fulford from Akyab, bound Falmouth, passed Port Laid in quarantine having lost from cholera three seamen at Chittagong, on outward voyage. Enquiry was made by Local Government Board, and no evidence of cholera subsequent to above date could be heard of. The vessel received orders off Falmouth, and then went to Bordeaux. The story of her arrival at Bordeaux is given in the *Times* of April 16, 1890."

Dear Dr. Hewitt:—Here is the information you ask for.

Yours very truly,

May 6, 1890.

GEORGE BUCHANAN.



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
SECRETARY'S OFFICE, RED WING, May 15, 1890.

Quarterly Supplement to Report on Vital Statistics, }  
First Quarter, 1890. }

NOTE.—In the following table of death causes

**Puerperal Diseases** includes *Puerperal Fever* and *puerperal septicæmia*.

**Diarrhœal Diseases** includes *Diarrhœa*, *Cholera Morbus* and *Dysentery*, of over five years of age.

**Diarrhœal Diseases of Children** includes intestinal diseases, under 5 years, during the summer months as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tubes Mesenterica* *Hydrocephalus* and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we have been unable to classify.

**Not Classified** includes deaths from certain specified causes, not included in the report following.

See page 56 for comments concerning mortality from certain diseases.

STATEMENT OF BIRTHS—FIRST QUARTER  
OF 1890.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT QUARTER FILED IN THE  
OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO  
MAY 15, 1890.)

GRAND TOTAL, 6230.		PER CENT	TOTAL.	MALES.	FEMALES.	UN- KNOWN.
SEX.	Males .....	51.68	6290	3220		
	Females .....	47.88			2983	
	Unknown .....	.43				27
COLOR.	White .....	99.89	6223	3217	2979	27
	Colored .....	.11	7	3	4	
	Unknown .....					
CONDI- TION.	Legitimate .....	99.35	6189	3192	2970	27
	Illegitimate .....	.65	41	28	13	
	Unknown .....					
NO. AT BIRTH.	Single .....	98.19	6126	3170	2919	27
	Twins .....	1.78	11	50	61	
	Triplets .....	.03	3		3	
	Unknown .....					
PARENT NATIVITY.	Both American .....	26.00	1620	851	762	7
	Both Foreign .....	56.27	3506	1790	1704	12
	Am. Father—Foreign Mother ..	4.60	287	150	137	
	Foreign Father—Am. Mother ..	10.80	637	354	312	7
	Unknown .....	2.31	144	75	68	1



OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO MAY 15TH, 1890).

Per cent. of deaths during the quarter	SEX.		SOCIAL STATE.					AGE.										NATIVITY.					PARENT NATIVITY.					Localities Invaded.*	Counties.*										
	Male.	Female.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp.	Other Minnesota.	Other U. S.	Foreign.	Unknown.			Both American.	Both Foreign.	American Father, Foreign Mother.	Foreign Father, American Mother.	Unknown.					
.00																																							
.26	6	2	6				3	1					1											1	2	2	1				4	1	1						
1.28	15	25	15				1	1	5	3	4		1										11	8	3	3				3	10								
4.81	75	76	72	2	1		2	2	7	17	6	8	22	6	2								36	22	13	4			19	41	4	7	4						
1.18	19	18	18				5	3	2	3	3	3											12	3	4			2	13	1									
.32	4	6	4				4																2	2				1	2										
2.32	47	26	29	18	1	1	1						5	4	5	13	10	5	3	1			6	4	14	23		15	33					1	8				
.86	14	1	10	3			3	1							1	4	2		2				2	4	8	10	2	4	19										
1.36		43													1	29	11	2						6	16	20	1	5	28	2	1	7	9	9					
.19	3	3																							1	2		2	1										
1.36	19	24	19				13	5	1														11	7	1			5	12										
.83	17	9	8	6	2	1								1	2	6	1	2	2	1			17	5	2			10	1	2									
.34	59	46					45	4	5	1	1												45	9	3	1	1	11	39	1	6								
.19	82	81	48	26	7	1	18	6	3	1	1	6	3	1	3	6	6	6	22				31	7	16	23	6	17	45	2	4	14							
.14			5	23	5	1										1	6	7	11	8	1			1	3	29	1	1	24										
10.00	133	181	73	95	5		1		1	1		1	4	7	48	28	25	10	7				8	12	32	76	5	22	81			6	24						
1.33	25	17	23				9	5	3	2		3			2				1				14	1	8	1	1	9	11										
3.82	69	51	17	47	4	1	3								2	3	10	13	12	21				10	6	9	35	3	14	36			1	18					
2.67		39	41	4			28	5	4	1	1			1	1				1				32	5	6	2		17	18	3	2	5							
2.42	220	170	122	86	11	1	24	20	6	2	5	6	2	10	33	29	26	36	21				49	20	67	79	5	57	119	4	5	35							
2.10	38	28	70	21	4		4	1							1	22	6	7	20				35	24	42	68	1	34	102	4	7	23	66	40					
6.16	112	50	8	17	2	1							1	1	3		7	7	2	6				1	2	9	15	1	8	14			6	13	12				
1.68	30	23																					50						26	68	8	7	8						
8.98	119	133	6	80	60	3																	30						9	17									
3.12	78	20	39	31	5	3	2	1	4														5	6	23	4	2	18	34	1	1	24							
15.13	241	234	151	81	6	3	58	19	3	4	4	11	9	3	24	31	17	25	32				81	29	42	85	4	50	143	5	11	32							
8.12	143	112	134	90	10	1	48	15	7	4	7	17	10	11	35	22	21	14	23				82	34	39	77	2	45	145	8	15	21							
			133	9			125																104	27		12		34	93	4	11	1							
			92	14	5	1	83	2															67	21	7	15	2	27	61	4	10	10							
1677			1055	499	109	14	493	81	56	24	27	64	35	34	156	153	123	122	136	108	56	9	597	170	334	542	34	366	940	35	75	261							
			1463	807	488	159	9	338	87	38	29	28	84	53	58	205	135	86	76	103	86	50	2	470	196	308	466	23	313	850	31	66	208						

\*Average for the quarter.

## MINNESOTA.

## MORTALITY IN THE FIRST QUARTER—MONTHS AND YEARS

	Year.	DEATHS BY MONTHS.									Deaths First Quarter.		
		January.			February.			March.			Total.	Localities Invaded.*	Counties. †
		Total.	Localities Invaded.	Counties.	Total.	Localities Invaded.	Counties.	Total.	Localities Invaded.	Counties.			
Total from all Causes.....	{ 1888 1217 1889 1137 1890 1365	..... ..... .....	..... ..... .....	..... ..... .....	1220 1128 931	..... ..... .....	..... ..... .....	1378 1199 844	..... ..... .....	..... ..... .....	3315 3464 3140	..... ..... .....	..... ..... .....
Measles .....	{ 1888 5 1889 23 1890 2	5 24 2	4 20 2	9 26 3	6 22 3	5 17 3	15 35 3	9 27 3	7 19 3	29 89 8	7 24 3	5 19 3	
Scarlatina.....	{ 1888 11 1889 27 1890 22	7 20 10	7 16 9	14 32 9	9 20 6	7 16 6	18 26 9	8 20 9	8 16 8	43 85 40	8 20 8	7 16 8	
Croup .....	{ 1888 21 1889 26 1890 19	18 20 15	15 15 13	27 27 9	18 19 9	12 15 9	24 16 9	16 14 7	13 14 7	72 72 37	17 18 10	13 16 10	
Diphtheria .....	{ 1888 117 1889 78 1890 64	56 40 34	36 25 24	73 63 49	37 29 17	25 20 15	55 67 38	28 25 23	21 19 19	245 208 151	40 31 25	27 21 19	
Typhoid Fever ..	{ 1888 57 1889 32 1890 44	26 20 25	21 19 20	35 27 17	19 20 12	17 19 12	36 32 12	18 20 11	17 17 10	128 91 73	21 20 16	18 15 14	
Diarrhoeal Diseases of Children	{ 1888 8 1889 21 1890 12	2 7 7	2 6 7	11 14 14	5 13 10	5 12 9	5 16 17	4 7 9	4 7 7	24 51 43	4 9 9	4 8 8	
Phthisis.....	{ 1888 160 1889 95 1890 129	55 56 70	36 46 38	101 100 94	56 76 56	33 42 36	121 102 91	77 66 53	50 42 35	322 297 314	63 64 61	39 43 36	
Bronchitis .....	{ 1888 47 1889 39 1890 46	31 16 15	27 14 15	33 58 17	17 23 10	15 21 10	56 46 21	29 21 12	25 18 10	136 143 84	26 20 12	22 15 12	
Pneumonia and Pleurisy.....	{ 1888 97 1889 91 1890 205	46 64 90	30 38 46	102 144 110	59 89 70	35 48 42	117 124 75	56 72 39	34 46 31	316 359 390	54 75 66	33 44 40	

\*Average for quarter.



# PUBLIC HEALTH IN MINNESOTA.

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VOL. VI. NO. 4.

JUNE, 1890.

WHOLE NO. 64

## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF MAY, 1890. DISEASES OF MEN.

Diphtheria.....	}	cases, 65
		deaths, 19
Scarlatina.....	}	cases, 66
		deaths, 8

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	10
Reported during the month.....	7
Killed.....	6
Released.....	0
Isolated.....	2

Remaining June 1st, 1890, isolated or not accounted for..... 11

NOTE.—Most of these are cases exposed, and isolated for further observation.

## DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF MAY, 1890, REPORTED UP TO JUNE 20.

(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)

Total number of deaths, 820; 439 males and 381 females; 58 per cent occurred in cities of more than 2,000 population. Ages, under 1 year, 30 per cent; between 1 and 5 years, 12.56 per cent; 5 and 15 years, 7.44 per cent; 15 and 30 years, 13.78 per cent; 30 and 50 years, 13.29 per cent; 50 and 70 years, 12.32 per cent; over 70 years, 8.90 per cent.

*Measles*—20 deaths (9 males, 11 females), in 9 localities, 8 counties; 14 occurred in cities. Ages, 65 per cent under 3 years. A decided increase in mortality and distribution compared with last month.

*Scarlatina*—20 deaths (11 males, 9 females), in 13 localities, 11 counties; 40 per cent occurred in cities. Ages, under 5 years, 60 per cent; between 5 and 10 years, 5 per cent. Mortality and distribution greatly increased over last month.

*Diphtheria*—34 deaths (15 males, 19 females), in 14 localities, 12 counties; 38 per cent occurred in cities. Ages, under 5 years, 44 per cent; between 5 and 10 years, 20 per cent; between 10 and 15 years, 20 per cent; over 15 years, 14 per cent. A slight increase in mortality compared with last month.

*Croup*—11 deaths (8 males, 3 females), in 8 localities, 8 counties; 36 per cent occurred in cities. Ages, 18 per cent under 2 years; between 2 and 5 years, 45 per cent; over 5 years 37 per cent. Mortality and distribution more than twice as great as last month.

*Typhoid Fever*—4 deaths (3 males, 1 female), in 4 localities, 4 counties; 50 per cent occurred in cities. Ages, between 20 and 30 years, 75 per cent; between 50 and 60 years, 25 per cent. A decided decrease in mortality and distribution compared with last month.

*Diarrhæal Diseases of Children*—18 deaths (8 males, 10 females), in 10 localities, 9 counties; 61 per cent occurred in cities. Ages, 83 per cent under 1 year; 17 per cent between 1 and 5 years. Mortality and distribution greater than last month.

*Bronchitis*—22 deaths (10 males, 12 females), in 11 localities, 9 counties; 77 per cent occurred in cities. Ages, 50 per cent under 1 year; 27 per cent between 1 and 5 years; 23 per cent over 15 years. A decrease in mortality compared with last month, with a slight increase in distribution.

*Pneumonia*—73 deaths (45 males, 27 females), in 29 localities, 26 counties; 72 per cent occurred in cities. Ages, under 1 year, 27 per cent; between 1 and 5 years, 27 per cent; between 5 and 15 years, 5 per cent; between 15 and 30 years, 9 per cent; between 30 and 50 years, 16 per cent; over 50 years, 16 per cent. Mortality greater but distribution less than last month.

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HOME AGAIN and very glad to resume my accustomed place, and to take this, the first opportunity, to publicly acknowledge, with hearty gratitude, the kindness and efficiency with which Dr. Franklin Staples, President of this Board, assumed and performed my duties during my absence. With him, as his faithful and reliable assistant, I wish to couple the chief clerk of the State Board of Health, Harry B. Lovgren, upon whom, as familiar from long practice, devolved the routine work of the correspondence and the superintendence of the other departments of the work of the office. He has done his duty with unflagging zeal, tact and judgment. Without the help thus given me I could not have taken the vacation, which I have endeavored to use to the best advantage for the common work.

---

C. N. H.

DIPHTHERIA—ITS PROBABLE TRANSMISSION FROM SICK CHILDREN TO PET CATS—AND ITS POSITIVE TRANSMISSION BY THE INOCULATION OF CULTURES OF THE BACILLI OF HUMAN DIPHTHERIA TO COWS, WHICH RE-APPEARED IN A VIRULENT FORM, IN THEIR MILK.

We are glad to be able to submit to our readers a reprint of this remarkable paper given to us, for this purpose, by its author. It will be read with interest, by Health Officers, particularly, as throwing much light upon the questions of the

origin and transmission of this persistent and fatal disease. Many of them, as has the writer, have suspected pet cats to have been one means of its distribution. Hereafter it is requested that such animals, suspected of having the disease, be sent (alive if possible) to the laboratory for study.

Prof. Klein's experiments on two cows and with their milk, received an unexpected additional support just before my return to London, and after his paper was written. One of the attendants at the Brown institution, where the cows were kept, gave some of their milk to a number of cats, with the result that most of them died of diphtheritic croup. I examined one of the tracheæ and have cultures of the bacillus diphtheriæ. The proof seems conclusive and the paper will lead to such repetitions of the experiments as will go far to clear up this very important question. It will occur to all interested to inquire as to any disease of cows furnishing milk to families which diphtheria may invade hereafter. The symptoms to look for are described in the paper. It will be printed in pamphlet form and may be obtained for distribution on application. H.

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CHOLERA has again appeared in Europe. This time in Spain, its origin not clearly made out at last reports. It was not unexpected by those who have made it a study and, not unlikely, will invade other countries this summer.

For us in America, and in Minnesota, the important fact is this: *Cholera can be surely forefended, prevented—by measures equally useful against diseases which are with us all the time, and cause the most of our preventible sickness and mortality.* It has been clearly proved that it does not become epidemic in any locality, outside of its tropic home, whose soil is clean and its water supply pure. It is just as clearly proven that in no other way can it be controlled. Old time quarantines are of no avail. Cases of the disease should be isolated, and usually are, coming from abroad, and their persons and clothing thoroughly disinfected before they are allowed to go on, after recovery. This is the common sense rule in force as respects all infectious diseases of which cholera is one. So far as it goes it is right, but it really does not protect, because, for one reason, persons with infected clothing, or carrying the infection in their persons, but not apparently sick, may and have passed inspec-

tion, as did the cases in two different outbreaks, some years ago, which took sick after reaching Minnesota, and died of cholera at a time when the trip took longer than it now does.

In view of the possibilities of the coming summer, it is the duty of Local Boards of Health, to re-examine with the greatest care the condition of the soil, and the water supply, and the first step is to remove all apparent causes of impurity in either. Begin by the abolition of the filthy "hole-in-the-ground" privy and cess-pool, and, where sewers and public water supply are wanting, substitute for the privy the earth closet, or above-ground water-tight tank, and for the cess-pool the distribution of sewage under garden or lawn by simple tile drains running from a water-tight under ground tank, to be regularly and properly cleaned. Then dispose of all garbage by collecting it in proper receptacles, (the half of a kerosene barrel with cover will do), to be set out in alleys daily and to be collected and emptied by a scavenger, employed by the local authorities, and to be spread on and plowed into cultivated land. The same disposition to be made of manure and all decaying organic matter. Dead animals to be buried in such land, immediately, by the same authorities.

Damp and boggy land to be properly drained, as also stagnant ponds. This done, look after the water supply, test the water of suspected wells, or send it to the laboratory here for that purpose—but before sending it write for instructions and the proper blanks to be used.

The circular of this Board on the "May Inspections," (which has been reprinted and favorably discussed in the journal of the Medical Officers of Health of England,) contains full instructions for the proper and successful sanitary survey of townships, villages and cities.

**I**MMIGRATION TO THE NORTHWEST.—A table published January 1, 1890, by J. E. Moore, landing agent in New York, gives some interesting statistics, just at this time, when the possibility of the importation of cholera is a source of anxiety; 411,913 passengers, cabin and steerage, landed in New York last year. Of these 96,686 were cabin passengers (second cabin or intermediate, and first cabin), and except sickness was reported by the ship's surgeon, the quarantine officer did not see them. That is 23.50 per cent practically escaped



inspection. Some sort of vaccination, of steerage passengers, is required to be made by the ship's surgeon the second day from port, but as the presence of a "scar" is sufficient justification for neglecting the revaccination, it is never too frequently done. In the ship on which I came over there were nearly 500 immigrants whom I assisted in inspecting and but about thirty-five were vaccinated, more than the usual proportion, the surgeon assured me.

*New York Quarantine.*—I am glad to report a very great improvement in the facilities for the sanitary care of sick or suspected immigrants in New York harbor, since my last visit. Dr. Smith, the Health Officer, met me at his office and went with me to inspect the isolation buildings, infectious disease hospital, and the disinfecting station. He has good reason to be pleased with the very great improvements he has made. Trial will demonstrate the usefulness of the new disinfecting apparatus, and it would be interesting to make some experiments therewith.

Under the new arrangement the immigrants are again inspected by the Marine Hospital service, on landing in New York. Visiting the infectious disease hospitals of the city, I saw cases of scarlatina and measles (I think) sent up in this way. H.

DIPHTHERIA IN VINING, OTTER TAIL COUNTY.—We publish an abstract of the correspondence as to a serious outbreak in this little village. It is the old story of carelessness, and inability to learn the plain lesson which we have been teaching for years. As soon as the disease was reported to the Secretary, steps were taken which have reduced the outbreak to sporadic cases, and will surely crush it out altogether. The newspaper charge that this Board had declined help is false, as this correspondence shows.

#### SANITARY NOTES AND QUERIES.

##### INFECTIOUS DISEASES OF ANIMALS.

GLANDERS—SLAUGHTER AND BURIAL BY AGREEMENT BETWEEN OWNER AND LOCAL BOARD WITHOUT FORMAL PROCEEDINGS FOR CONDEMNATION.

"In regard to glandered horse we had quarantined, the owner killed and buried it, on receipt of ten dollars, we thinking it much the cheapest way we could manage the affair."

In undoubted cases, this method is often the best, not only saving expense, but very often hard feeling and delay. The Board should always verify the killing and burial and see that disinfection (as provided in circulars on glanders), is properly done.

## A CONTRIBUTION TO THE ETIOLOGY OF DIPHTHERIA.\*

BY E. KLEIN, M. D., F. R. S.

A PAPER READ BEFORE THE ROYAL SOCIETY, LONDON, MAY 22, 1890—REPRINTED FROM PROOF SHEETS GIVEN BY DR. KLEIN, TO DR. HEWITT.

THE microbe, which was first described by Klebs (at the Weisbaden Congress in 1883), then isolated and grown in artificial cultures by Löffler ('Mitth. aus dem K. Gesundheitsamte,' vol. 2) from human diphtheritic membrane, was shown by this observer to act virulently on various animals. The Klebs-Löffler bacillus—by which name the diphtheria microbe is known—is the one with which also Roux and Yersin ('Annales de l'Institut Pasteur,' 11, No. 12) obtained positive results on guinea-pigs.

In the Reports of the Medical officer of the Local Government Board for 1888-89, and 1889-90, I have shown that there occur in diphtheritic membranes two species of bacilli, very similar in morphological respects, and also in cultures on serum and on agar, but differing from one another in this, that one species, Klebs-Löffler bacillus No. 1, is not constant in diphtheritic membranes, does not grow on solid gelatine at 19–20° C., and does not act pathogenically on animals; the other species, Klebs-Löffler bacillus No. 2, is constant in diphtheritic membranes, in fact is present even in the deeper layers of the membranes in great masses and almost in pure culture, acts very virulently on animals, and grows well on gelatine at 19–20° C. Löffler, and after him other observers (Flügge, 'Die Mikroorganismen,' 1886), considered it as a character of the diphtheria bacillus that it does not grow on gelatine below 22° C., but this character, though true of the Klebs-Löffler species No. 1, does not appertain to the diphtheria bacillus species No. 2. In fact, there is no difficulty in obtaining pure cultures of this bacillus on gelatine if a particle of diphtheritic membrane be taken and well shaken in two or three successive lots of sterile salt solution, and from the last lot plate cultivations on gelatine are made. In this way I have obtained the diphtheria bacillus in great numbers of colonies and in pure culture. Zarniko ('Centr. f. Baet. u. Parasit.,' vol. 6, p. 154) and Escherich (*ibidem*, vol. 7, p. 8) both state that the diphtheria bacillus does grow on gelatine below 20° C.

This bacillus diphtheriæ acts very virulently on guinea-pigs on subcutaneous inoculation; at the seat of the injection a tumor is produced, which in its pathology and in microscopic sections completely resembles the diphtheritic tissue of the human. In human diphtheria the diphtheria bacillus is present only in the diphtheritic membrane, but neither in the blood nor in the diseased viscera; the same holds good for the experimental guinea-pigs. In subcutaneous inoculation with artificial culture, though it causes in these animals acute disease and death—the lungs, intestine, and kidney are greatly congested—the diphtheria bacillus remains limited to the seat of inoculation. It was for these reasons that Löffler concluded that in diphtheria the diphtheritic membrane alone is the seat of the multiplication of the diphtheria bacillus, and that here a chemical poison is produced, which absorbed into the system causes the general diseased condition and eventually death. Roux and Yersin have then

\* This research was undertaken for the Medical Department of the Local Government Board, and is communicated to the Royal Society with the permission of the Medical Officer.

separated from artificial broth cultures the bacilli and the chemical products, and, by the injection of these latter alone into guinea-pigs, have produced a general effect. I have in this year's Report to the Medical Officer of the Local Government Board, 1889-90, shown that in these experiments of injection of cultures into guinea-pigs, an active multiplication of the diphtheria bacilli at the seat of inoculation can be demonstrated by culture experiments; from the local diphtheritic tumour and the nearest lymph glands the diphtheria bacilli can be obtained in pure culture on gelatine.

On various occasions during the last three years information has reached me by Health Officers (Dr. Downes, Mr. Shirley Murphy, Dr. Thursfield) as to a curious relation existing between a mysterious cat disease and human diphtheria in this manner, that a cat or cats were taken ill with a pulmonary disease, and while ill were nursed by children, and then these latter sickened with well-marked diphtheria. Or children were taken ill with diphtheria, and either at the same time or afterwards the cat or cats sickened. The disease in the cat was described as an acute lung trouble; the animals were quiet, did not feed, and seemed not to be able to swallow; in some cases they recovered, in others they became emaciated, while the lung trouble increased, and ultimately they died. In one instance—in the north of London, in the spring, 1889—this cat malady, occurring in a house where diphtheria soon afterwards appeared amongst the children, was of a widespread nature; a veterinary surgeon—Mr. Daniel—informed me that at that time he had several patients amongst cats affected with the disease, consisting in an acute catarrhal affection, chiefly of the respiratory passages. He furnished me with two such animals: one that after an illness of several weeks had died, another that was sent to me in a highly emaciated state, affected with broncho-pneumonia; this animal was paralyzed on the hind limbs. In both instances the *post-mortem* examination showed severe lung disease, broncho-pneumonia, and large white kidneys due to fatty degeneration of the entire cortex. A similar condition is met with in the human subject in diphtheria. Further, I received from Dr. Thursfield, of Shrewsbury, the body of a cat that had died after a few days' illness from pneumonia in a house in which children were ill with diphtheria; another cat in the same house that became next ill with the same lung trouble also succumbed. The *post-mortem* examination of the animal that I received showed severe broncho-pneumonia and large white kidneys, the entire cortex being in a state of fatty degeneration.

Subcutaneous inoculations of cats were carried out with particles of fresh human diphtheritic membranes and with cultures of the diphtheria bacillus (report of Medical Officer of the Local Government Board, 1889-90); thereby a local diphtheritic tumor was produced at the seat of inoculation, and a general visceral disease; in the cases in which death followed after a few days the lungs were found much congested; when death followed after one or more weeks, the lungs showed broncho-pneumonia and the kidneys were enlarged and white, the cortex being in a state of fatty degeneration; if the disease in the animals lasted beyond five to seven days, both kidneys were found uniformly white in the cortex; if of shorter duration, the fatty degeneration was sometimes only in patches. Although in these experiments the bacillus diphtheriae was recoverable by cultivation from the diphtheritic tumor at the seat of in-

oculation, there were no bacilli found in the lungs, heart's blood, or kidney, and the conclusion is justified that, just as in the human diphtheria and in the diphtheria produced by subcutaneous inoculation in the guinea-pig, so also in these experimental cats the visceral disease must be a result of the action of a chemical poison produced by the diphtheria bacillus at the seat of inoculation.

From this it is seen that the similarity between the artificial disease and the natural disease in the cat is very great, and the question that presents itself is, In what manner does the animal receive or give the diphtheritic contagium in the natural disease? The natural disease in the cat is in its symptoms and pathology a lung disease, and it is reasonable to suppose from analogy that the lung is the organ in which the diphtheritic process in the cat has its seat. The microscopic examination of the diseased lung of cats that died from the natural disease bears this out, the membrane lining the bronchi in the diseased portions of the lobules presenting appearances which in microscopic character coincide with the appearances in the mucous membrane of the human fauces, pharynx, or larynx in diphtheria. But the correctness of the above supposition, that diphtheria has its seat in the lung of the cat naturally diseased, was proved by direct experiment. Broth culture of the bacillus diphtheriae was introduced into the cavity of the normal trachea without injuring the mucous membrane. The animals became ill with acute pneumonia, and on *post-mortem*, two to seven days after, there was found extensive pneumonia, and fatty degeneration of the kidney. The bronchi, infundibula, and air cells of the inflamed lobules were found occluded by, and filled with, exudation which under the microscope bears a striking resemblance to human diphtheritic membranes, and in the mucopurulent exudation in the large bronchi and trachea the diphtheria bacilli were present in large numbers.

During the last ten or twelve years certain epidemics of diphtheria have occurred which were traced to milk, but the manner in which that milk had become contaminated with the diphtheritic virus could not be demonstrated, although the evidence as to the milk not having been directly polluted from a human diphtheria case was very strong. The epidemic of diphtheria that prevailed in the north of London, in 1878, investigated by Mr. Power, for the Local Government Board, then the epidemic that occurred in October, 1886, at York Town and Camberley, the epidemic in Enfield, at the beginning of 1888, and in Barking, towards the autumn of 1888, were epidemics of this character. Mr. Power, in his Report to the Local Government Board on the York Town and Camberley outbreak, states (page 13) that a veterinary surgeon had certified that the cows from whom the infected milk was derived were all in good health, but that two of the cows showed "chaps" on their teats, and he adds that even two or three weeks after the epidemic had come to an end—the use of milk having been in the meanwhile discontinued—he saw at the farm one cow which had suffered chapped teats. At Enfield a veterinary inspector had also certified that the cows were in good health; but at Barking the veterinary inspector found sores and crusts on the udder and teats of the cows.

I have made experiments on milk cows with the diphtheria bacillus, which appear to me to throw a good deal of light on the above outbreaks of diphtheria.



Two milch cows\* were inoculated with a broth culture of the diphtheria bacillus derived from human diphtheria. In each case a Pravaz syringeful was injected into the subcutaneous and muscular tissue of the left shoulder. On the second and third days there was already noticed a soft but tender swelling in the muscle and the subcutaneous tissue of the left shoulder; this swelling increased from day to day, and reached its maximum about the end of the week; then it gradually became smaller but firm. The temperature of both animals was raised on the second and third day, on which days they left off feeding, but after this became apparently normal. Both animals exhibited a slight cough, beginning with the eighth to tenth day, and this gradually increased. One animal left off feeding and ruminating on the twelfth day, "fell in" considerably, and died in the night from the fourteenth to fifteenth day; the other animal on the twenty-third to twenty-fourth left off taking food, "fell in" very much, and was very ill; it was killed on the twenty-fifth day.

In both animals, beginning with the fifth day, there appeared on the skin of the udder, less on the teats, red raised papules, which in a day changed into vesicles, surrounded by a rim of injected skin, the contents of the vesicles was a clear lymph, the skin underneath was much indurated and felt like a nodule; next day the contents of the vesicle had become purulent, *i. e.*, the vesicle had changed into a pustule; in another day the pustule dried into a brownish-black crust, with a sore underneath; this crust became thicker and larger for a couple of days, then became loose, and soon fell off, a dry healing sore remaining underneath. The whole period of the eruption of papules, leading to vesicles, then to pustules, and then to black crusts which, when falling off, left a healing dry sore behind, occupied from five to seven days. The eruption did not appear in one crop: new papules and vesicles came up on the udder of one cow almost daily between the fifth and eleventh day after inoculation, in the other cow between the sixth and tenth day; the total number of vesicles in the former cow amounted to about twenty-four on the udder, four on the teats; in the latter they were all on the udder and amounted to eight in all. The size of the vesicles and pustules differed: some were not more than  $\frac{1}{8}$  of an inch, others larger, up to  $\frac{1}{2}$ — $\frac{3}{4}$  of an inch in diameter; they had all a rounded outline, some showed a dark centre. From one of the above cows on the fifth day milk was received from a healthy teat, having previously thoroughly disinfected the outside of the teat and the milker's hand; from this milk cultivations were made, and it was found that thirty-two colonies of the diphtheria bacillus without any contamination were obtained from one cubic centimetre of the milk.

Unlike in the human, in the guinea-pig and in the cat the diphtheria bacillus passed from the seat of inoculation into the system of the cow; this was proved by the demonstration of the diphtheria bacillus in the milk. But also in the eruption on the udder, the presence of the diphtheria bacillus was demonstrated by microscopic specimens and particularly by experiment. With matter taken from the eruption—vesicles and pustules—of the udder, two calves were inoculated into the skin of the groin; here the same eruption made its appearance: red papules, rapidly becoming vesicular, then pustular, and

\* The cows had been kept under observation previous to the experiment for ten days and were in all respects perfectly normal.

then became covered with brown-black crusts, which two or three days after became loose and left a dry healing sore behind. More than that, the calves that showed this eruption after inoculation became affected with severe broncho-pneumonia and with fatty degeneration of the cortex of the kidney. In the two cows above mentioned, on *post-mortem* examination, both lungs were found highly congested, œdematous, some lobules almost solid with broncho-pneumonia in the upper lobes and the upper portion of the middle or lower lobe respectively; the plural lymphatics were filled with serum and blood. Hæmorrhages in the pericardium and lymph glands, and necrotic patches were present in the liver. At the seat of inoculation there was in both cases a firm tumor consisting in necrotic diphtheritic change of the muscular and subcutaneous tissue. In this diphtheritic tumour continuous masses of the diphtheria bacillus were present; their gradual growth into and destruction of the muscular fibres could be traced very clearly.

It appears then from these observations that a definite disease can be produced in the cow by the diphtheria bacillus, consisting of a diphtheritic tumour at the seat of inoculation with copious multiplication of the diphtheria bacillus, a severe pneumonia, and necrotic change in the liver; the contagious nature of the vesicular eruption on the udder and excretion of the diphtheria bacillus in the milk prove that in the cow the bacillus is absorbed as such into the system.

From the diphtheritic tumour by cultivation, pure cultures of the diphtheria bacillus were obtained; a small part removed from the tumour with the point of a platinum wire, and rubbed over the surface of nutrient gelatine or nutrient agar, yielded innumerable colonies of the diphtheria bacillus without any contamination. In cultural characters in plate, streak, and stab cultures and in cover-glass specimens of such cultures, this cow diphtheria bacillus coincided completely with the human diphtheria bacillus, but in sections through the diphtheritic tumour of the cow a remarkable difference was noticed between it and the bacillus from the cultures; inasmuch as in the tissue of the tumour the masses of the microbe, both in the necrotic parts, as also where growing into and destroying the muscular fibres, were made up of filaments which in aspect resembled to a considerable degree the hyphæ of a mycelial fungus. But that it was really the diphtheria bacillus was proved by culture experiments and by cover-glass specimens. In the latter the transitional forms between typical diphtheria bacillus and long filaments with terminal knob-like swellings, with spherical or oblong granules interspersed here and there in the threads, could be easily ascertained. In the large number of cultivations that were made of the fresh tumour in both cows, the colonies obtained were all of one and the same kind, viz., those of the diphtheria bacillus; no contamination was present in any of the cultivations.

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**D**IPHtheria AT VINING, OTTER TAIL COUNTY.—The disease in this locality, (which is a railroad station located in Nidaros Tp., and near the line of Folden Tp.) was reported to this Board, March 4, 1890, by Mr. J. W. White, chairman pro tem. of the Local Board of Health of Nidaros. He reported four cases in one family, one death having occurred March 3. The Local Board had acted promptly, isolated family and placed a guard. March

8 the State Board sent the usual letter of instructions, and copies of the law and circulars for distribution.

No further reports were received from this locality until April 11, when Mr. A. T. Lund, of Vining, reported thirty deaths from some disease which he called diphtheria. Immediately upon receipt of this report, April 12, the following letter and copies of law and circulars was sent to the chairman of Folden Tp., as our maps show Vining to be located in that township. "Mr. A. T. Lund, of Vining, informs me that diphtheria exists there to an alarming extent, over thirty children having already died from the disease. Please report to me at once the facts, and the action of your Board. I send you copies of the laws and circulars defining the duties of your Board in this matter. All infected families should be promptly and strictly isolated. Public funerals of those dying of this disease are forbidden by law. Disinfection and cleansing of houses, persons and clothing, should be thorough after the disease disappears. If these cases are not in your town, please deliver this letter and documents to the chairman of the town in which they are."

Now both Boards, that of Nidaros and of Folden Tps., had been instructed in their duties and furnished copies of the law and circulars, and it was assumed that they were attending to this matter according to law, as no further reports were received until April 21, from the chairman of Nidaros Tp., when he reported, "three families affected. Board at work, and Dr. Lossius, who has attended most cases, has been employed." This report gave no idea of anything alarming, and all seemed well until the morning papers, April 23, contained statements of a most alarming character. "Numerous deaths had occurred, more dying daily, village was in danger of being wiped out of existence, the State Board of Health had been appealed to, and had offered no aid, etc." On the appearance of these articles, this Board telegraphed to Mr. A. T. Lund, of Vining, and to Dr. A. B. Cole, H.O., of Fergus Falls, for facts. They immediately replied that the disease was there and the Local Board doing little or nothing in the way of preventing spread. Dr. Cole was then requested, by telegram, to visit Vining and investigate the disease, instruct the Local Board, etc. The Local Boards of Nidaros and Folden were also written to on this date concerning their duties.

April 24, Dr. Cole reported that he had visited Vining as per instructions. Found thirty deaths had occurred, seventeen during April. Public funerals had been held, and a majority of them had had extra large attendance. Instructed chairman as to the duties of the Board. Epidemic nearly over, no deaths having occurred since April 19. April 26, Dr. Cole reported further: "Visited chairman of Folden Tp. and instructed him. The Board of Nidaros met April 24, as instructed, and are going to work. The public school at Vining has been closed indefinitely."

This Board, in order to get a full history of the outbreak, and to ascertain who was at fault in allowing this disease to exist without any attempt at preventing its spread, and not reporting the facts as they were to the State Board, requested from Dr. Cole and from the chairman of the towns a full account of the matter. April 28 Dr. Cole reported:

"The local physician says it is not diphtheria, but admits it is like diphtheria, is epidemic, contagious and unusually fatal, and should be quarantined,

Dr. Reynolds, of Henning was called to Vining to see a patient, pronounced him sick with diphtheria, and quarantined the house. The local physician next day said it was not diphtheria and raised quarantine. While admitting the disease to be contagious and fatal, he not only failed to report the cases to the Board of Health, and allows public funerals, but attends them himself.

"One of the first to die during the epidemic was a girl, to whose funeral all the relatives came, and they are numerous. In less than a week nearly every family that attended the funeral and had children was stricken down, and some of them lost all the children they had. One family had diphtheria and were burned out when one was lying dead, and two more sick. There was no empty house in Vining for the family to go to, so they went to different families temporarily, and in every family they visited diphtheria broke out forthwith.

"Many of the people in and around Vining are what might be called fatalists, insisting on their right to attend funerals, and that God will not allow them to have the disease unless He wants them to, and that unless they were born to die at that time and in that way that they will not die. God, however, seems to agree that those who expose themselves are the ones he wants should have the disease."

May 12 the chairman of Nidaros reported: "During last October and November, a few deaths occurred, in the latter month four in three families in same neighborhood. Some called it diphtheria, and our Board held a meeting and consulted Dr. Lossius who attended the cases. He said the disease was croup and not infectious. He advised a thorough cleaning of the premises where these cases existed. The Local Board acted upon this advice. No further cases until March, when the disease appeared in one family, three cases, two deaths. No exposure known. I heard nothing more of the disease until April 20, when I was informed that it was raging at Vining. I immediately called a meeting of the Local Board and went to work. If we have neglected our duties it is because we have been misled."

April 28 the chairman of Folden Tp., reported:

"The first case of this disease appeared in our township (Folden) about thirty days ago. Dr. Lossius of Vining was the attending physician. He did not pronounce it diphtheria, and I cannot now recollect the name he gave it. The epidemic was first called diphtheria, on the 25th inst., by Dr. Cole, of Ferguson Falls. When our Board was informed by a doctor that it was diphtheria, we ordered people to disinfect and clean up. There have been no deaths in Folden since the disease was pronounced diphtheria. There have been five deaths from this cause in Folden previous to Dr. Cole's visit. The sickness is abating in our township and we hope and expect it will very soon entirely disappear."

May 10 this Board asked Dr. Cole to make a final investigation at Vining. This he did and reported May 14, as follows:

"I find there is but one case of diphtheria in the township, and that case quarantined. All houses where the disease has existed have been thoroughly disinfected, and the school opened, which I think safe and right.

"After my other visits the chairmen of the boards of townships, Nidaros and Folden, quarantined all infected houses, had thorough disinfection, and the disease stopped at once. There were no fresh cases excepting in houses where the disease already existed, and only two deaths since, showing plainly the benefit of quarantine, isolation and disinfection. The people of Vining have cause to thank Messrs. J. S. Jacobson and N. N. Rakstad, for the thorough way they attended to the work once their attention was called to it, and to Mr. A. T. Lund for sounding the alarm."

May 17 the chairman of Folden Tp. reported that diphtheria had disappeared from their town, and all infected premises had been cleansed and disinfected.



May 20, the chairman of Nidaros Tp. reported five new cases in the Vining school district, in one family, and that he had visited and isolated the family, placing a guard.

May 26, the chairman of Folden Tp. reported, "two new cases in two families, both isolated. We have done everything possible in our town but the disease seems to break out again."

May 26, the chairman Nidaros reported "two new cases and two deaths— isolated. Have asked school board to close school. We do not think the disease has been communicated in school, but it is safest to keep it closed so long as diphtheria is in the district."

May 29, chairman reported, "one new case in family already infected, and two deaths—one is this family and one in another."

May 30, chairman of Folden Tp. reported, "no cases now; one death occurred May 28. Two houses still isolated."

June 2, chairman Nidaros, reported, "no deaths since last reported. Think other cases will recover. School has been closed again."

June 9, chairman reported: "There has been no public funerals since our Board began work, and all bodies have been buried as soon as a coffin could be obtained. The disease is again on the decline, only a couple of cases now, and they will probably recover. The trouble now is to control the people, but we have warned everybody that if our rules and regulations are not obeyed we will prosecute, and they have agreed to co-operate with us. The members of our Board live in opposite corners of the town, and we have spent much time, as we have taken turns in making a round of the infected houses. We could think of no other way to keep ourselves and the State Board informed."

June 16, the chairman reported: "Diphtheria is now over and I hope will not appear again. I desire to thank the State Board of Health for all assistance kindly rendered us."

### ANNUAL INSPECTION REPORTS.

CROOKSTON (C.) POLK CO., DR. M. WATTS, H. O., JUNE 2, 1890.

*To the Board of Health of the City of Crookston:*

THE inhabited part of the city, except the extreme northern and southern portions, which are on the prairie, is mostly surrounded by the river, and the soil is of river formation, composed of a mixture of clay, sand and gravel. It is, therefore, easily drained and dries quickly, after a wet season. Having had a deficiency of moisture for the last two years, everything is dry except river and wells, and three sloughs or ponds which always contain water. Even cellars on the prairie, and two or three blocks, near the centre of the city, which heretofore usually held water are, with one exception, quite dry. Outside the platted part of the city are the two largest sloughs. They contain clear water. The small pond, known as Lake View, near the centre, which has been such a nuisance in the past, is being filled.

Owing to some obstructions in the sewer, a part of a block between Third and Fourth streets is flooded. It will be remedied by the new sewer. The hollow between Broadway and Ash streets, south of Fletcher street, owing to poor drainage, will be a nuisance when we have much moisture.

Our public sewerage consists of a drain under the G. N. R. R. yards, about 750 feet in length. It was intended as an outlet for the sewerage of the city. It is intended to extend it about 1600 feet through that part of the city where it is most needed this summer. Engineers are now at work surveying and preparing a plan for a general sewerage system.

The drinking water used by most citizens is good. It is taken from flowing wells, which are obtained by boring from 50 to 250 feet. A number use from ordinary wells from 10 to 30 feet in depth. Most of them pass through or reach sand or gravel. A few use river water, which, above the city, is good. But unfortunately most of that which is used is taken from

the water mains, which are supplied from water which has coursed round most of the city. The river, through a large portion of the city above the water works, is lined by stables and privies, perched well over the bank so as to get the most fall. Besides what manure or other filth gets in it accidentally or otherwise, many have filled low places along the banks with it and covered. The Red River Lumber Co. also deposit in it a large quantity of sawdust and shavings, all of which is deposited in comparatively still water as the river is dammed below. It furnishes power for pumping and running a flouring mill.

We have no city scavengers; everyone disposes of his dirt the best he can. The council has not acted on our recommendation to appoint one or more. We ought to recommend a detailed plan. I think they would be more likely to act on it.

There are five school buildings in town; they are roomy and have good opportunities for ventilation. Out-buildings and grounds are in good order; other public buildings are the same. Hotels and large boarding houses are numerous—about a dozen. They are about as well kept as practicable, without better sewerage. One of them—the St. Louis—has a private sewer into the river, above the pump-house, of course. There are six livery stables and some hotel stables. They are kept tolerably clean. Four keep horses in lower story partly underground. Four slaughterhouses, two below the city on river, and two above on ravine, 300 feet from ravine. They were very filthy, but are in pretty good shape now. The meat markets, four in number, on as many different streets, look clean and smell as sweet as such places usually do. The streets and alleys and private residences and yards are mostly clean. Privies consist mostly of holes in ground with house over them. I recommended strongly the dried earth closets, and distributed instructions for making and using, and documents on Domestic Hygiene liberally.

ROCHESTER (C.) OLMSTED CO., DR. F. R. MOSSE, H. O., APRIL 7, 1890.

*To the Mayor and Common Council of the City of Rochester:*

The city dumping grounds, which were opened for use early in 1889, afford a place for the deposit of manure, night soil, garbage, and other refuse, and carcasses of dead animals, which latter with night soil and other very offensive material are buried by the city scavenger. Very good order has so far been observed on the grounds. But very little opposition is met with in our efforts in causing the removal of manure, night soil, pig sty nuisances, and the city is in a good condition as far as these matters are concerned.

We are not yet cleaned from the accumulations of the past winter but we expect to be before the spring is over.

The proper removal of kitchen refuse from private premises, and slops from saloons, restaurants and hotels in the central parts of the city has not in some instances been as carefully attended to as necessary but there is considerable improvement going on and the efforts of the Board in this direction will not be abated.

To sum up our methods of keeping clean, we can say that manure and rubbish are hauled onto cultivated land and plowed under, or to the city dumping grounds. Garbage and swill are carted away by parties using them for feed, or by the city scavenger. Night soil, from privy vaults, is taken to the dumping grounds by the city scavenger and buried. Our surface drainage is looked after as carefully as possible by the street commissioners, and depending, as we do, entirely on the carting away system of removing our filth, we are doing well; but this is necessarily a very expensive and hence incomplete method and in the absence of a general sewerage system a large amount of liquid filth goes on to the surface of or into the soil. The cess-pool system is in common use, and is extending every year, and the only method which can supersede it is the sewage system.

The Secretary of our State Board of Health, in speaking of cholera, says the lesson of being always ready, which we try to make the standard of our work in Minnesota, should not be forgotten—pure air, water and soil are the real safeguards against cholera and many other and more important important diseases. We have a large number of cess-pools and a few private sewers, none of which are properly built and all rapidly poisoning the soil. A general system of sewerage is a sanitary need and it would also be a great convenience to a large number of consumers of city water.

In regard to the cleanliness of the streets no criticism can be made except as to the condition of Broadway between College and Fifth Streets; but that smells to heaven; it is as bad as a manure yard the year round, and at the very doors of our business houses. When the street is wet, as at present, it is a rank foul smelling nuisance and the worst bit of road in

Olmsted County. When the street is dry the filth becomes powdered, is blown into the air and we inhale it as dust. We inhale the fumes in wet weather, and the dust, which is worse, in dry weather. The street should be macadamized, or paved, when it can be kept in good sanitary condition, and would make a decent street and be a credit to the city.

The matter of providing a city market is also important in a sanitary way, as it would relieve Broadway from a large amount of filth.

Our city pest house was blown away by the cyclone in 1883, and we have had no occasion to use it since. Yet we should be ready to care for cases of contagious disease instantly. A small comfortable house should be built on the city pest house grounds, as with it we would feel better equipped to care for a possible case of contagious disease. St. Mary's hospital has no conveniences for the care of such cases, and we are informed that the hospital authorities will make no extensions this year, and it is doubtful if they ever decide to place a pest-house on their grounds.

In regard to nuisances on property owned by impecunious persons there was formerly no proper remedy. The Board of Health could order such party to clean a privy vault or abate a nuisance and in case of failure to comply with the order the party might be fined and imprisoned, but that did not clean the vault or remove the nuisance and was a measure no city authority would use against a poor man.

Chap. 39, Gen. Laws for 1883, provides a remedy for this matter, by giving the council power to remove the nuisance and assess the costs upon the property. Such action is necessary on the part of the council in regard to cleaning of privy vaults on lot 5, block 21, N. Addition; on lot 2, block 10, Moe & Old's Addition; and on lot 8, block 20, Moe & Old's Addition.

The bettering our sanitary condition, as above indicated, requires the paving of Broadway, the building of a general sewerage system, the construction of a pest-house, and the cleaning of the above described vaults. We are pleased to state that the nuisance caused by the pollutions of Silver Creek by the sewage from the Second Hospital for the Insane is at last to be abated by a settling and filtering system of purifying the sewage which is deemed satisfactory by the State Board of Health, and by the local parties concerned and which is to be constructed at once. We are pleased to record our satisfaction at the prompt action taken in this matter by Supt. Kilbourn, of the Hospital, and the board of trustees.

An examination of the city public school buildings, shows them to be well heated and ventilated and in good sanitary condition. The Smead dry air closet, in the Central building, while not fathered by the Board of Health, seems to work perfectly and is not known to be the cause of any sickness. Sanitary regulations are well enforced in the schools.

The private educational institutions in the city are kept in the same excellent sanitary condition.

WINONA (C.) WINONA CO., DR. FRANKLIN STAPLES, H. O., APRIL 14, 1890.

*To the honorable Mayor and Council of the City of Winona:*

In accordance with law the Board of Health hereby submits the annual report of its acts and proceedings and of the sanitary condition of the city, together with a summary of the Vital Statistics for the municipal year ending April 1, 1890.

The meetings of the Board have been held as often as required for the sanitary work of the city.

One sanitary inspector has been employed by the Board, with the approval of the council, during the year, from April 1, 1889, to April 1, 1890, and is now on duty. This officer reports daily to the office of the Health Officer and receives his orders and instructions therefrom. The work of a single sanitary inspector for a city of this size, and constituted and situated as our city is, is much greater than might be supposed, and requires, on the part of the officer, good judgment, practical knowledge, and constant attention. The Board has reason to be satisfied with the manner in which the work in this department has been done during the past year. This work consists in the investigation of all cases where complaints are made of the existence of nuisances and unsanitary condition of premises, serving notices demanding the removal of the same, superintending such removal. The slaughter houses and rendering establishments are frequently inspected and their condition reported. The wells of the city water-works have their regular inspection. The superintendence of the cleaning of privy vaults and of cess-pools, and of the care of the authorized dumping grounds of the city, so far as to see that no violations of the city ordinances are committed at these places and in this work. This, together with posting cards, locating places of contagious disease, removing quarantine when houses are free from disease, and disinfecting premises when necessary, constitute important parts of the inspector's work.

*Slaughter Houses.*—The Board is able to report that all slaughtering of animals is done at the two authorized slaughter houses, and that the same have been kept in a sanitary condition and conducted in a satisfactory manner.

*Disposal of Garbage.*—Two dumping grounds have been used during the year, one authorized by the mayor for the dumpage of manure, ashes, rubbish, etc., not considered unsanitary,



and the other located by the Board of Health, for the reception of the contents of privy vaults, cess-pools, unsanitary garbage, and for the burial of dead animals. These have been properly cared for. A constant watchfulness is required to prevent the dumpage of garbage in improper places. It is found that in some parts of the city, especially in alleys, many obstructions exist, such as piles of stable manure, etc., which often do not properly come under the department of health, but which should be attended to by the street department.

*Water Supply.*—The water of the city water wells is in a good condition. The water from some drive wells in the city has been found to be hardly up to a healthy standard. A chemical analysis of these waters has been made during the year.

*School Buildings.*—The public school buildings are in a good sanitary condition, and are kept clean. In the new high school building, and what is called the Central Building, what is known as the Kuttan system of heating, ventilation, and for the disposal of the material of the water closets is in use, and works in a manner fairly satisfactory, which the temperature and quality of the air in most of the school rooms is always in a good condition, yet at some times in a few rooms, owing to the condition of the outside air and the wind the ventilation is not quite up to a good standard.

The school buildings in the eastern and western parts of the city still have in use the large old fashioned privy vaults sunk in the earth. These nuisances may never be wholly removed until the city's prospective system of sewerage shall reach these localities.

*City Pest House.*—The old city hospital and pest house in the fourth ward has been removed and the property disposed of for other purposes. A new and well-constructed pest-house, built of brick and made fire-proof, has been built on property leased from the Cemetery Association, in a valley south of Lake Winona. This building now needs to be furnished, and when this is done the city will be supplied with all that could be desired for the accommodation of small pox cases.

No cases of disease have occurred during the year requiring the use of the pest house. Four cases of non-contagious disease, coming properly under the care of the Board of Health, have been properly provided for at St. John's Hospital.

*Police Station and City Lockup.*—The remodeling and enlargement of the city building has greatly improved the condition of the police station and the city lockup. The appointments for the police and the prisoners' rooms and the water closets are kept in a good condition. It is to be regretted, however, that the building, with all its new appointments, is not quite up to a good standard in point of ventilation.

There have been no injuries to persons while being arrested by the police and the services of the Health Officer as city physician to cases of sickness and injuries of vagrants, transients, paupers, those taken to St. John's Hospital as city charge and in some instances to some who, perhaps, might have been subjects of county care, but where the line of responsibility could not be well drawn.

*Sewerage.*—The Board has nothing yet to report in the way of advancement in the matter of city sewerage. Investigations have been made in the matter of plans of sewerage but nothing further has yet been done. We have only to repeat as the expression of this Board that the city's health and prosperity demands the establishment of a system of sewerage. For want of a general system, as a matter of necessity two private sewers have been put in discharging into the river. One of these, fortunately, has done away with and replaced the old wooden sewer of the old Huff House.

*Vital Statistics.*—During the year, from April 1, 1889, to April 1, 1890, there were in the city 720 births; males, 380; females, 340.

The number of deaths during the year was 300; males, 179; females, 121. For the preceding year the number of births was 719; males, 386; females, 333. The number of deaths, 273; males, 131; females, 132.

During the past year only four deaths have been reported from typhoid fever. Thirteen cases of scarlatina have been reported, and five deaths; eighteen cases of diphtheria, and nine deaths; seven deaths have occurred from membranous croup, thirty-one from pneumonia, and twenty-two from phthisis.

The work of the Board of Health in brief is:

1. To use all possible means to prevent the occurrence of disease, by causing all premises, public and private, to be kept in a sanitary condition.

2. To prevent the introduction and spread of contagious and infectious disease, by a careful guard against the importation of such diseases from without, and by judicious quarantine and sanitary work where diseases capable of communication are found to exist. The schools are notified to the existence of contagious disease among pupils and pupils of families affected are not permitted to attend school until all danger of contagion has passed. In this connection the Board is glad to acknowledge that, with a single exception or two, the physicians of the city have been prompt to notify the Board whenever contagious diseases have been found to exist.

Burial permits are issued by the Health Officer for the burial and transportation of dead bodies, upon written application stating the cause of death, etc., thus not only enabling the office to obtain statistics of deaths, but to keep a guard against the importation and spread of contagion. Fortunately the sanitary laws of our State and city enable the health department to do good and thorough work.

The amount expended by the Board during the year for sanitary work, for men and teams doing scavenger work where it was not incumbent upon property owners to do the same, for removing and burying dead animals, for the support of city patients at the hospital, and for other incidentals has been \$385.49. During the last two months the removal of dead animals, except where a team was required, has been done by the inspector without expense to the city.

The city of Winona has ever been known as the healthiest city in the State, and this reputation must be preserved.



# PUBLIC HEALTH IN MINNESOTA.

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AND VITAL STATISTICS,

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## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JUNE, 1890.

### DISEASES OF MEN.

Diphtheria.....	}	cases, 52
		deaths, 9
Scarlatina.....	}	cases, 21
		deaths, 2

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	11
Reported during the month.....	9
Killed.....	7
Released .....	1
Isolated .....	1

Remaining July 1st, 1890, isolated or not accounted for..... 12

NOTE.—Most of these are cases exposed, and isolated for further observation.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF JUNE, 1890, REPORTED UP TO JULY 20.

(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)

*Total number of Deaths, 777; 411 males, 366 females; 60 per cent occurred in cities of more than 2,000 population.* Ages, under 1 year, 33 per cent; between 1 and 5 years, 10.93 per cent; 5 and 15 years, 8.76 per cent; 15 and 30 years, 14.54 per cent; 30 and 50 years, 12.88 per cent; 50 and 70 years, 11.45 per cent; over 70 years, 5.44 per cent.

*Measles.*—8 deaths (3 males, 5 females) in 6 localities, 5 counties; 50 per cent occurred in cities. Ages, 87.5 per cent under 3 years. A decided decrease in mortality and distribution compared with last month, and the corresponding month of 1889.

*Scarlatina.*—9 deaths (4 males, 5 females) in 4 localities, 4 counties. All occurred in cities. Ages, under 5 years, 77 per cent; a marked decrease compared with last month and the corresponding month of 1889.

*Diphtheria.*—28 deaths (17 males, 11 females) in 12 localities, 11 counties; 46.43 per cent occurred in cities. Ages, under 5 years, 32.14 per cent; between 5 and 10 years, 50 per cent; 10 and 15 years, 14.28 per cent. Compared with last month, a slight decrease in mortality and distribution. Mortality and distribution less than one-half that of same month last year.

*Croup.*—8 deaths (2 males and 6 females) in 6 localities, 6 counties; 62.5 per cent occurred in cities. Ages, under 5 years, 75 per cent; between 5 and 10 years, 25 per cent. A slight increase in mortality compared with last month; but greater than for same month of 1889.

*Typhoid Fever.*—13 deaths (9 males, 4 females) in 7 localities, 7 counties; 84.66 per cent occurred in cities. Ages, between 5 and 10 years, 15 per cent; 10 and 15 years, 15 per cent; 15 and 20 years, 7.57 per cent; 20 and 30 years, 38 per cent; 30 and 40 years, 7.57 per cent; 40 and 50 years, 15 per cent. An increase in mortality compared with last month; but less than during corresponding month of 1889.

*Diarrhæal Diseases of Children.*—47 deaths (26 males, 21 females), in 9 localities, 9 counties; 90 per cent occurred in cities. Ages, under 1 year 80 per cent; between 1 and 2 years, 15 per cent. A continued increase in mortality compared with previous months; but less than the same month last year.

*Bronchitis.*—12 deaths (4 males, 8 females) in 5 localities, 5 counties; 83 per cent occurred in cities. Ages, all under 3 years. A decrease in mortality and distribution compared with last month; but about the same as the corresponding month of 1889.

*Pneumonia.*—36 deaths (20 males, 16 females), in 18 localities, 17 counties; 55 per cent occurred in cities. Ages, 52.77 per cent under 5 years; between 5 and 15 years, 5 per cent; 15 and 30 years, 10 per cent; 30 and 50 years, 11 per cent; over 50 years, 21.23 per cent. Mortality less than last month, or June, 1889.

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**A**TENTION is called to the above summary, particularly to the encouraging report of every infectious disease—better than for same month last year, and for diphtheria, less than half the mortality of June, 1889.

Cholera infantum is less fatal than for June last year. Its period of greatest mortality was in 1887, July; 1888–89, August.

## MINNESOTA WEATHER SERVICE.

STATE SUMMARY FOR 1889.

CORP. JOHN HEALY, REPORTER.

LOCALITIES	Total Precipitation in inches.....		LOCALITIES	Total Precipitation in inches.....	
	Mean Temperature...			Mean Temperature...	
Duluth .....	40.9	32.04	Rolling Green.....	44.1	15.81
Farmington .....	45.1	23.07	St. Paul .....	44.4	17.96
Lake Winnibigoshieh.....	39.4	21.30	St. Vincent.....	37.4	14.44
Mankato .....	45.7	19.16	La Crosse, Wis. ....	45.9	24.37
Minneapolis.....	44.3	18.26	* Alexandria .....	....	16.37
Moorhead.....	40.0	17.07	* Fergus Falls.....	....	15.87
Morris .....	41.8	18.30	* Fort Ripley.....	....	14.86
Northfield .....	44.4	20.63	* Ortonville.....	....	17.74
Pine River Dam.....	39.7	20.86	* Redwood Falls .....	....	16.14
Pokegama Falls.....	....	25.65	* Tracy .....	....	21.12
Red Wing.....	44.6	19.07	MEAN.....	42.7	19.09

Temperature { Mean, 42.3, State.  
Max., 100°, July 7, Farmington.  
Min., -44.57°, Feb. 22, Grand  
Forks, N. D.  
Yearly range, 144.5  
Last frost, Pokegama, June 22.  
First frost, Moorhead, Aug. 4.

Precipitation { Total, 19.08.  
Excess, Feb., Aug., Dec.  
Deficient during other months  
notably Oct., when the av.  
was .1 inch.

\*Reports Precipitation only.

Stations which missed one or more months, or whose record is incomplete, omitted.

METEOROLOGICAL OBSERVATIONS MONTHLY. — We are making another effort to get those for Minnesota into shape for publication, with the monthly record of "Distribution and Mortality of Specified Diseases," so that the respective data will be comparable. This is no easy thing to do. Hope to begin next month. The usual returns of the signal office are not suited to that purpose, we condense the returns for 1889, this time.

NOTIFICATION OF INFECTIOUS DISEASES of both men and animals was made compulsory for the first in 1883; for the last in 1885. Nearly every mail brings the Secretary evidence of the value of the rule, and of the cordial appreciation of it by physicians and laymen, as well as by Local Boards of Health. See under "Infectious Diseases of Men," for one of these striking illustrations which occurred in July.

RAILWAY STOCK YARDS—SLAUGHTER HOUSES, and the like, can be compelled to comply with the regulations of the Local Boards of Health made under Chapter 222, Laws of 1885. When complaint has been made to this Board, and an arrangement secured satisfactory to the Local Board concerned, it is bound to enforce the agreement, and not to rely on the State Board to do it.

GLANDERS IMPORTED INTO MINNESOTA FROM DAKOTA.—A very important illustration of how this was done will be found under "Diseases of Domestic Animals." Local Boards of Health adjacent to unorganized townships, should be on the lookout for similar practices, and give immediate notice to the Secretary.

RABIES—HYDROPHOBIA.—I know of but one death in man, reasonably to be attributed to this cause, during the last eighteen years, in Minnesota, though I believe all suspected cases have been reported to this office.

Two, supposed, outbreaks have been reported during this month, (July, 1890,) one in a dog and a cat, the dog bit child, and the other in, and confined to, a herd of cattle. In the first, all suspected animals had been killed and buried before the matter was reported. In the latter, the head of one cow was sent to me, packed in ice. Putrefaction had begun, however, and experiments on other animals were impossible. Careful dissection showed enough other disease of the head to account for symptoms, and to put rabies out of question. The date of the first was July 12; of the second, July 20, and no reports since. The attention of every reader, particularly Health Officers, and Members of Boards of Health, is called to the article on "Rabies Suspected, What to Do." If the suggestions there made are followed, we shall be able to get at the truth in most of the cases. Bites by the lower animals on man, unless *manifestly* the results of irritation or fear, justify the isolation of the biter till the truth is known. It should be the *invariable rule*, as a week's time at the farthest, will clear the record of the bitten, though the biter may subsequently die of rabies. The danger of the disease, in the past and now, is very slight; and so is the danger of small pox, or a fire. But none the less we keep a sharp look out, and are always ready for either, not from fear, but as "forewarned, forearmed."

C. N. H.



CHOLERA IN EUROPE.—The *Journal d'Hygiene* of July 10, says: "We have no new reports of cholera in Russia or Upper Mesopotamia. It appears that the disease has made no new advance, that it is quiet, and that it has invaded no new localities to the north, or east, of Mosoul.

"As to Bagdad, and other cities situated on the Euphrates, in Kerbela, Nedjif, etc., the time for the appearance of cholera epidemics, in these localities, is the end of summer and the autumn. It is almost certain that the cholera of 1889, will occur this year in summer or fall. It will probably be the same in Persia. It is to be remembered that this Kingdom, free from cholera since 1873, is by that fact more liable, and the germs of the disease, brought from Mesopotamia, will find there, without any doubt, conditions favorable to their development. As to Spain, in the Province of Valencia, the registration of the last fortnight shows scarce any increase of disease, or of invasions of new localities. These districts suffered so heavily in 1885, that it is scarcely probable that the epidemic of 1890 will be severe. In Puebla de Bugot, and in Montichevlo, there are few new cases, and in the adjoining villages there has been no marked diffusion of the disease."

The Government commission have returned to Madrid and declared the disease true Asiatic cholera. They were compelled to submit to disinfecting fumigations before admitted to the city, "without doubt," says the *Journal*, "for the purpose of reassuring the population."

The news to date from Spain, indicates a subsidence of the cholera epidemic; but it is irregular and it is believed that the civil authorities are endeavoring to deceive the government, and that the disease is more prevalent in Valencia than reports would indicate, so that it is impossible to get a clear idea of the actual condition of things. Cholera has certainly not spread beyond Spain.

The French have changed their system of quarantine. Every person coming from Spain into France or Algiers, must declare to the authorities on the frontier the Commune of France to which he wishes to go. He is given a sanitary passport, which he must deliver to the Mayor of the Commune within twenty-four hours after his arrival.

### INFECTIOUS DISEASES OF MEN.

**NOTIFICATION OF INFECTIOUS DISEASES.**—Experience in using this law is piling up evidence of its value.

Dr. A. T. Conley, of Cannon Falls, Goodhue county, called to sick children in the township Belle Creek, same county, found malignant diphtheria, of which the Township Board of Health had received no notice. He notified them, and as two older girls had gone to St. Paul, via Red Wing, also notified the Secretary State Board of Health, who in turn, informed the Health Officer of Red Wing, and called for a report from the Local Board of Health, of Belle Creek. The Health Officer of Red Wing found and isolated the girls, one of whom had sore throat, but was better. The outcome will be closely watched, and the Chairman of Belle Creek reported promptly, isolation of family first infected.

**DIPHTHERIA—Duty of Health Officers Outside Infected Families.**—When Township Boards of Health call in a physician to examine a case of suspected diphtheria, or any other infectious disease, he should be instructed to inquire for other sick in the neighborhood, and if possible to visit adjacent families, particularly those who have had relations with the infected ones. Other cases are not infrequently found, and in any event the physician can put neighbors, and visitors on their guard, and give useful advice as to the safety of the families.

**Public Funerals of the Dead.**—Are absolutely forbidden, and Local Boards of Health in Townships are most frequently at fault.

**Better Move the Well Children to a Place of Safety and make the Home the Hospital.**—Sending back to it all who get sick, till the disease is at an end, and every thing in the home, and the house itself, thoroughly, and repeatedly disinfected. (See circular on diphtheria.)

“Rabies in Men and Animals,” on p. 48.

### INFECTIOUS DISEASES OF ANIMALS.

**HOG CHOLERA.**—See “On How to Stamp Out and How to Prevent,” on p. 50.

**RABIES—Hydrophobia.**—In men and cattle. See article on this subject in this number. Particularly as to sending dead animals, their heads, or their brains to this office,

**GLANDERS ON THE ROSEAU RIVER.**—(*unorganized*)—*Kittson County.*—This outbreak was reported by P. McGowan, Township Clerk, of St. Vincent township, Kittson county, March 30, 1890, and that the herd was isolated. A. Campbell, L. R. C. S. E., had made an investigation of the matter and reported to the Local Board of St. Vincent township, 30 suspected cases. Nine animals had just been killed, by order of a veterinary surgeon from Dakota, employed by Messrs. Geroux & Co., of Pembina, N. D., the owners of the herd. The premises were “in a most filthy condition, no hay, no straw, and I find on inquiry that the animals have not had proper food.” March 8, 1890, a file of blanks, etc., was sent to the local board of St. Vincent township, with the usual letter as to the proper method of dealing with glanders. March 14, the County-Attorney of Kittson county, enclosed a communication from the Post Surgeon at Fort Pembina, N. D., calling attention to the fact that glanders existed along the Roseau river and that horses from that vicinity were brought to Pembina. March 19, the County-Attorney was informed that the disease had been reported, and that the matter had been placed in the hands of the St. Vincent Board. He was asked to aid them where possible. March 13, the Town Clerk, of St. Vincent township, reported that the infected herd was in an unorganized territory, 40 miles east of their town, and that the Board of St. Vincent do not feel justified in dealing with an outbreak outside of their town. March 18, the State Board asked the St. Vincent Board to deal with the mat-

ter as if it was within their jurisdiction, and it would bear the necessary expense, properly certified to. April 3, Town Clerk, of St. Vincent township, reported that the horses were getting well, and that the Board of Hallock township were taking action. April 7, the Town Clerk, of Hallock township was requested to report any action of their Board. April 8, he replied that the cases on Roseau river had been killed. The County Commissioners had employed veterinary surgeon to examine all horses in the county. April 12, a report was requested from the Chairman of County Commissioners. April 15, he reported that his Board had ordered an investigation, and a report would be made after the veterinary surgeon had finished. April 29, the County Auditor forwarded the report of D. H. McFadden, V. S., employed by the Commissioners. "All horses that could be found were examined, sixteen in number, one was pronounced glanders, and the others suspected. The place was quarantined, and two boys attending the herd placed in charge." He advised the examination of all animals belonging to the herd, and certain other precautions. May 6, the matter was placed in the hands of the County Commissioners, as agents for the State Board. June 16, the County Auditor enclosed a subsequent report of Dr. McFadden's, of his second examination. "Examined 69 horses, which had been stationed in a new corral, as per advice on my first visit. All well, and in good condition, three animals had been killed after my first visit. A case was found in the old stables, which was killed. Country is unsettled. Advise isolation of the well animals for thirty days. Between 50 and 60 horses in this herd have died." June 18, the Chairman of County Commissioners was requested to see that Dr. McFadden's suggestions, as to the isolation, were complied with. He was asked certain questions as to the origin of the disease, action taken by owners, etc. June 23, the County Auditor reported that all precautions advised had been taken, and that no further trouble was feared. The herd was stationed on the Roseau river for wintering.

*The History of this Outbreak* is reported by the County Attorney as follows:

"Mr. L. E. Booker, of Pembina, N. D., brought in here last summer a herd of bronchos, driven as I understand, from Montana. These bronchos were sold throughout the county, and it is from them in every instance that the disease was contracted.

From the best information that I can gather these ponies showed no well defined systems of the glanders, at the time they were sold, but some of them were running at the nose at that time and some of the buyers remarked it at the time, but were informed that it was nothing more than a severe cold, contracted on the way from Montana, and relying on the truth of that statement they had no suspicion of anything more serious being the matter.

So far as I can learn the owners were in no case negligent or remiss in reporting to the Town Board of Health as soon as they began to suspect that their horses had a disease other than a cold or distemper, but it took them a long time to discover that fact for the reason that none of them had any knowledge of that disease.

The above facts can all be substantiated by the best of evidence, and that the entire blame rests with L. E. Booker, in bringing those ponies here can not be disputed.

The herd of ponies at the Roseau river that has given us so much trouble also belonged to the same Booker, and one Gereaux, both of Pembina, N. D., and constituted the unsold portion of the same herd above referred to, thus furnishing the necessary link in the chain of evidence to fasten the blame on Booker.

I am also reliably informed that Mr. Booker employed a veterinary surgeon to examine his horses at the Roseau, long prior to the discovery of glanders among his herd by the authorities, and that he was then informed that they had glanders, but that he took no measures to either prevent its spread or to treat the horses for the disease."

## QUESTIONS AND ANSWERS.

[NOTE.—Under this title will be found a brief of the matters of this sort, accumulated since the last issue, of general interest.]

**DIPHTHERIA AND CROUP**.—The Chairman of a Township Board of Health writes that he is "at loss to know how to act when one physician tells him a given case is croup and not infectious, and another that it is diphtheria and to be isolated." Our statistics indicate that in their essential characters the diseases are distinct; but when they *occur together*, as they often do, the only safe rule of practice for a Local Board of Health, is to treat croup as diphtheria (by isolating, disinfecting, etc.) till it is proven not to be diphtheria, or has recovered. We can give many illustrations of the necessity and advantage of this rule. See Vol IV, pages 97-98.

**Stock Yards and Slaughter Houses**.—Chap. 222, Laws of 1885, for regulating offensive trades, gives to Local Boards of Health ample power to deal with either of these. The State Board stands ready to co-operate as the law permits.

**Creameries as sources of nuisance—Foul air and water pollution**.—In answer to several complaints this statement is made. Butter and milk, or any of their by-products, become very offensive when decaying, are difficult to remove from water and decompose slowly under ordinary circumstances.

The *safest, cheapest* and least offensive way of disposing of the buttermilk and washings, is as food for hogs, provided that the troughs and pens are clean and no accumulations of mixed buttermilk or whey, either alone or with the excretions of the animals is permitted to remain unburied.

The best way to dispose of the washings of tubs and floor, which cannot be fed to animals, is to run them, clear of curd or butter, under growing crops or meadow land in underground tile drains, or on the surface of cultivated land, in shallow furrows, to be covered and renewed with the plough as need be.

**Professional expert opinions**, given by physicians or veterinary surgeons to Local Boards of Health, as a basis for official action, and for pecuniary compensation must be *in due form, in writing, written with ink*, and give in detail the facts upon which the opinion is based, and an opinion with suggestions as to measures to be taken, all of which is to be signed in ink, with the professional title of the signer, as required by the form furnished by the State Board of Health. This should be distinctly understood by all concerned when such advice is called. Local Boards of Health will hereafter insist on the above for their own protection and in the interest of all concerned.

**Who returns the Births and Deaths in Villages organized under the General Village Law?**—See Vol. III, p. 81; and Vol. IV, p. 11, of this journal for the opinion of the Attorney General. It is, that such villages make the returns for themselves, independent of the township in which said village is. If Clerks and others interested had read PUBLIC HEALTH, they would have seen this answer months ago.

**Rabies**, suspected in man or cattle, see p. 48, this number.

## HYDROPHOBIA—RABIES—WHAT TO DO.

**TAKE** a common case, of which an example occurred the other day: A dog, or other animal running wild, bites a child, or other animals, and is still at large. What shall be done?

1st. Dress the wound of the child by cleansing it thoroughly and promptly, with a 3 per cent solution of carbolic acid, or a solution of 1 in 1000 of corrosive sublimate (either can be gotten at any drug store), or if one of these is not at hand, with whisky, or dilute alcohol, till one can be obtained. It is well to put on a moderately snug bandage *above* the wound, if on hand, foot, arm or leg, so as to encourage free bleeding till the dressing is applied. *Caus-*



*ties, hot iron, and the like, are of no use.* When the wound is dressed, have it clean and clear of blood clots, then soak a clean bit of surgeon's cotton, or clean old handkerchief, in the solution used, and let it dry on, not to be disturbed, unless painful, until the wound is well.

*As to the "mad" dog, if possible, by all means catch and isolate him in a clean, roomy, quiet and comfortable, place, where, if it can be arranged, his master may attend him, and he can be kindly treated and well fed. It is all important to know if he is mad, and with this treatment a few days will tell the story. To kill him would be to bury his secret with him, and compel experiments with his brain at the laboratory—unnecessary if he is kept alive.*

The treatment specified is necessary to distinguish between the rage of other diseases, terror, suffering and abuse, and the real "rage" which we seek to prevent.

Should the suspected animal have been killed, or die, immediately cut off his head, leaving an inch or two of neck, pack in ice (keeping it dry as possible), and express *promptly*, and with no delay, to the Secretary State Board of Health, at Red Wing.

All animals bitten by the suspected animal, should be isolated; always if *a human being has been bitten at the same time*, as each is a test case and of value in answer to the crucial question, *Was the biter mad?*

If no one was bitten, then the question of value will decide between isolation and slaughter; but one or the other is to be the rule, and if isolated, of course, while under suspicion, no animal is to be given the opportunity to bite any person or other animal.

Local authorities should provide that all dogs running at large shall be registered, wear collars and have responsible owners. All others, after reasonable delay in confinement, to be killed.

*The muzzle is the rule abroad.*

*Hydrophobia—Rabies—Suspected among Cattle.*—What is to be done?

Here is the usual record.

An animal becomes either suddenly, or less rapidly, wild; i. e., bellows, is restless, scrapes with his fore feet, and butts and kicks all who approach, etc. What to do and how to decide if it is real rabies, or another disease in the brain, or affecting it, resembling rabies.

Isolate the animal, call competent advice as to curative treatment; but to clear the record, always isolate the case and any others similar, till they die or recover.

If they die of probable hydrophobia (rabies) remove the brain, put it into sufficient pure glycerine to cover it, seal the vessel and express to the Secretary State Board of Health, Red Wing. Or, if this cannot be done, carefully and well, pack the head in ice, as above directed, and forward by express.

*Expense incurred—who pays.*—The necessary expense of isolation of suspected case of rabies, is slight, and borne by the owner, as is the expense of the veterinary surgeon *for treatment*. The Town Board are not bound to call a veterinary surgeon except when *in their judgment* his advice is needed to decide whether the disease is infectious. They have nothing to do with the treatment or medical care of such animals. That belongs to the owner. Report

all such cases in as full detail as possible, and find, and care for, the suspected biter if you can.

In several instances animals suffering from malignant catarrh and from colic, have been called mad and killed; but post mortem examination in every case of suspected rabies of animals, in our State, in which it has been made, proved the disease to be something else, as has the subsequent history.

In the last instance the head of the victim was forwarded to the writer. Immediately on receipt he removed the brain, the blood vessels of which were filled with gas, and the organ offensive from putrefaction making experiments with it useless.

So far as could be judged the frontal sinuses were very congested, the membranes of the brain thickened and opaque; but the capillaries not much injected.

### HOG CHOLERA.

WHAT IS IT?—HOW TO PREVENT IT—HOW TO STAMP IT OUT.

BY THE SECRETARY.

I HAVE just returned from an investigation of a very fatal outbreak of, apparently, hog cholera, including the examination of the animals, living and dead. The inquiry has been transferred to the laboratory for experiment with infected organs by way of bacteriological examination.

Everything was favorable for the occurrence of any infectious or blood-poisoning disease whose virus might be present. The animals were all fed on kitchen and other refuse, from Minneapolis. They were swill-fed hogs. Their pens were contracted and filthy, and the care of most of them does not seem to have called for cleanliness in any direction. The loss has been heavy, and any that remain are likely to be worthless as food. Until ordered otherwise the apparently well, the sick, the dying, and often the dead, occupied the same pen.

The dead are now properly buried. The apparently well and the sick are put into separate, healthful, and sheltered pens, and the infected yards are to be plowed or harrowed, and disinfected, with lime on the ground, and white-wash on floors and walls.

No going out or coming in of hogs to be permitted till all danger is passed. The Local Board of Health are in direct charge and responsible.

Complaints of affections and mortality something like this are not uncommon at this season of the year, particularly in herds of hogs fed and cared for as were these.

Something like, occasionally happens on apparently

healthy farms, and very great interest is therefore felt, and frequent inquiries are made, at this office.

To supply this natural demand, is the object of this paper, copies of which may be procured through Local Boards of Health, or of the Secretary State Board of Health, at Red Wing, free of charge.

*Hog Cholera.*—For the purposes of this circular the conclusions of the Bureau of Animal Industry, are adopted, and the following summary is made up from the report on this disease. (Fourth and Fifth Annual Reports, 1889, Washington.) Almost all fatal diseases of the lungs and bowels in swine go by this name; but it is now well enough ascertained that it should be restricted to a disease whose most reliable symptoms are to be learned on post mortem examination, which should be made as if the animal was to be prepared for food. "The spleen (milt,) will usually be found enlarged and very black. Spots of blood from a pin head to a quarter inch, or more, will be found in the fat under the skin, on the intestines, lungs, heart, and kidneys. When the larger intestines are opened, they are found covered with these dark spots of blood, more or less uniformly, and entirely. Often the contents are covered with clotted blood. These are the usual symptoms in acute cases. In more chronic cases the pigs grow weaker, lie down most of the time. Eat but little, and usually have diarrhœa. Most of the cases may linger for weeks, meanwhile scattering the poison in the discharges. In such cases no delay should occur. Kill one and open the bowels; slit up and examine the large intestine, beginning at the blind end. There will be seen roundish yellow or blackish spots, having an irregular depressed, sometimes elevated, surface. These spots are ulcers, and correspond to dead portions of the mucous membrane, and they are frequently seen from the outside as soon as an animal is opened. Sometimes the lining membrane has been destroyed."

In *Swine Plague*, the lungs are the principal seat of attack, (a broncho-pneumonia,) the pleura (lining membrane of the chest,) is secondarily involved. The bowels, if involved, show more of exudation, like that of diphtheria, than the peculiar ulcers of hog cholera. The rectum (lowest extremity of the large intestine), is often invaded in swine plague, rarely in hog cholera. The two diseases may occur, apparently, in the same individual; but usually may be distinguished as above. An inflammation, confined chiefly to the bowels, evidently infectious and fatal, though often of long duration, may, for sanitary purpose, be called *hog cholera*, even though the lungs are partially involved. On the other hand an inflammation of the lung, extensive, and fatal, though often of long duration, confined chiefly to the lungs is the only severe inflammation known in the lungs of swine, and may be called, and treated as, *swine plague*. The virus of the first, is the most persistent, as it can live in infected soil for months; and that of the latter is much less resistant. *For sanitary purposes treat them both alike, and always isolate sick swine.*

How does the disease occur? The ways in which it may reach a healthy herd, are:

(a) "Pigs purchased from infected herds, or coming in contact with those

from infected, in running over ground occupied by diseased swine, within a period of two or three months."

(b) Infected streams may communicate the disease to herds below the source of infection.

(c) Virus may be carried in feed, implements, and on the feet and clothing of persons from infected herds and premises.

(d) Some other animals may carry the infection, as *dogs, rats*, and, perhaps, mice.

All these means of carrying the infection are easily preventable, and sick and well may be on the same farm, and not far apart, (if they are guarded as above) without danger, as on the experimental farm in Washington.

*But if Hog Cholera has appeared in a herd—what then?* The object in view is two fold:

(1) "To prevent the virus from being carried to other farms, and infecting other herds."

(2) "To prevent loss of the entire herd; or if that is not possible, to stamp out the disease in such a way that the ground shall not infect healthy animals subsequently introduced. Do it in this way:

(a) The dead must be immediately disposed of by burial.

(b) Streams to be protected from pollution by the discharges from the sick or by washings of the soil they have polluted.

(c) No animal to be removed from an infected herd or locality to another free from disease, except for slaughter, for at least six months after the last case of the disease has died or recovered. No removal, for any cause, except by permission of the Local Board of Health.

*What to do with the remaining, apparently, healthy animals.*

(a) Remove them to inclosed, unaffected grounds, or pens, in a healthy locality, giving them the best of care and food.

(b) Destruction of all diseased animals. Owners may be allowed to have medical care for sick animals, at their own will and expense, if strictly isolated by themselves, and treated as possible sources of infection to others, under the supervision and regulation of the Local Boards of Health, who report, to the State Board, the facts in each case.

(c) Compel burial of the dead.

(d) Repeated, thorough, disinfection of infected premises.

(e) Great cleanliness as regards both surroundings and food, to prevent them becoming infected.

*For Disinfectant*, the best and cheapest is, ordinary unslacked lime to be scattered in powder one-fourth inch thick over infected grounds and floors, and in the proportion of two pounds to the gallon of water, used as a white-wash for wood work, in and outside, buildings.

*It is very important not to let infected hogs run at large*, scattering the poison in a way to make disinfection impossible. They must be kept to their inclosures for that reason.

The law (Chapter 10, Laws of 1885,) requires owners to report all infectious diseases of animals to the Local Board of Health, it promptly reports the same to the Secretary of the State Board, who will co-operate in every practicable way, with owners and Boards to prevent, or stamp out this fatal, but easily preventable disease.

C. N. H.



TUBERCULOSIS IN THE MILK AND FLESH OF ANIMALS  
USED FOR HUMAN FOOD.

BY THE SECRETARY.

AS our readers are aware, this question has already assumed a very serious importance abroad, particularly in Great Britain, because careful scientific inquiry has demonstrated that the disease may be communicated in several ways from animals used as food, to man. I gave a part of the time I spent abroad to the study of this subject, and propose in this and other essays to state what I learned about it as a practical question of Public Health. In this paper I will quote the conclusions of Principal Walley, M. R. C. V. S., of the Edinburgh Royal Veterinary College, as fairly representing the opinion of a considerable number of the best veterinary authorities of Great Britain.

I had the pleasure of making his acquaintance and formed a very favorable opinion of him and of the work which he has done in veterinary hygiene. He has had a very sad experience in his own family, and person, of the reality of tuberculous infection, and has made it the subject of long and careful study. "The domestic animals of this country (Scotland), cattle, pigs and poultry, are pre-eminently the hosts of this disease. It occurs with tolerable frequency in the horse (Prof. McFadyean). Sheep and goats are rarely, if ever, spontaneously affected, though the disease can be readily transmitted to every living creature by inoculation with particles of the so called tubercles. In 1872 he publicly expressed the conviction that the disease was of a specific nature and was capable of being propagated from animals to man—endorsing thereby Villeman, who, in 1868, made the first actual demonstration of this fact. During the last fifteen years hundreds of animals, of various species, have been sacrificed to determine the actual nature of the malady. In 1882 Koch discovered the microbe—bacillus—of tuberculosis, a microscopic vegetable near akin to the lowest order of fungi—*fission fungi*,—i.e., it has the power of multiplying by division, and from its elongated, staff-like, shape, it is known, technically, as a *bacillus*. This minute plant not only multiplies by fission, but by spores, which are of infinitely greater importance than are the bacilli, inasmuch as, like the seeds of a plant, which they are, they withstand much more trying conditions of life than the plant itself. It has been shown, by Pasteur, that at 212° F., milk containing these spores must be boiled for some time to render them harmless. This fact must be borne in mind in considering the question of the danger or harmlessness of tuberculous flesh or milk. Thus it is believed, and in fact distinctly proved, that the dried spittle of a consumptive person, or the discharges from the nose of a consumptive cow, adhering to wood work, and similar substances, may be the means of infecting healthy persons or animals, respectively, long after they have been so deposited.

"The methods by which bacilli, or their spores, are most likely to gain access to the living body, are (1) by inhalation (breathing); (2) by ingestion (swallowing) of any fluid, or solid, matter, containing tubercular products, "It has been shown distinctly that these products need not contain a single bacillus in order to render them infectious. And this is easily accounted for "by the fact that though no matured bacilli may be present, there may be

"thousands of spores, which, when sown in favorable ground, develop, in the course of time, into matured bacilli. When calves are fed on the milk of cows suffering from tuberculous disease of the udder, or milk mixed with tuberculous matter; the disease develops along the membrane of the mouth, throat and bowels. At the same time there can be no doubt that millions of these bacilli are rendered harmless by the juices of the stomach, or are swept out the bowels before they can gain lodgment. Many of these organisms pass through the mucous membranes of the bowels or lungs, and, carried by the lymphatic vessels to the lymphatic glands, develop there. Next to these glands the lining membranes of the chest, and abdominal cavities, are most largely affected. Of the internal organs, the lungs, liver, kidneys, and brain are most frequently the seat of the disease, though the substance of the heart and the sweet bread are rarely, if ever affected."

*"The udder of the cow, unfortunately, is also frequently affected and many of the so called cases of 'garget,' or 'weed,' are nothing more or less than cases of tuberculous inflammation. As respects the flesh of infected animals, actual tubercular growths are seldom found in the structure of muscles, (or at least not large enough to be visible to the naked eye,) unassociated with disease of some adjacent organ, such as a joint or bone; but there is abundant evidence to show that the juice of the flesh of tuberculous animals contains the germs of the disease.*

*"Tuberculosis in birds, in the character of its visible lesion is different, in many respects, from that of the mammals as above described. Birds with webbed feet (palmpedes) are seldom, if ever, affected; nor are turkeys or guinea fowls; but poultry and pigeons are decimated by the disease, grain eating birds being most frequently attacked (Dr. Bland Sutton). He thinks from the contamination of the grain by the feces and other products of infected birds. The disease in poultry is known as 'croup,' or 'roup' (scientific name, gregarinosis). The discovery of the bacillus of tuberculosis has established the fact that, with few exceptions, these affections are tuberculous."*

*"The process begins, usually, in the mucous membrane of the mouth, nostrils, or the eye, and extends throughout the whole digestive track. From the nostrils to the throat and lungs. In some cases the comb, wattles, ball of foot, and skin of the breast are affected. The spleen (milt) is frequently, the kidneys occasionally, affected. On the membranes the disease is like diphtheria membrane, yellow and tolerable firm. In the internal organs it forms nodules—little tumors—which, in the liver, are often so close together as almost to destroy the normal structure. In the rabbit the disease is mostly apparent in the liver, which is greatly enlarged, and the animal is poor and "pot-bellied." In all animals the effects of the disease depends: (1) On the rapidity of its progress; (2) upon its extent; (3) upon the importance of the organ involved; (4) upon the seat of the tubercles—in the interior or on the exterior of the affected organ; (5) upon the amount of inflammation which the tubercles induce; (6) upon the subsequent change—whether the tubercular masses remain hard or become soft; (7) upon the constitution of the animal."*

*Use of the flesh and milk of tuberculous animals for human food.*—Principal Walley is very positive. He says: "In 1872 I lost a child under circumstances which allowed of but one explanation, viz, that he contracted

mesenteric tuberculosis through the medium of milk." He quotes, with approval, the resolution of the International Congress, of Paris, in 1889: "There is reason to prevent the consumption by men or animals of the flesh of tuberculous animals—mammals or birds—whatever the degree of tuberculosis or whatever the apparent quality of the meat."

"That the flesh of tuberculous animals and even the tuberculous organs of such animals may be consumed with impunity when properly cooked, cannot be denied; but in how many instances, it may be asked, is such flesh eaten without being properly cooked? When the facts already stated as to the power of resistance to heat of the spores of the tubercular bacillus, are borne in mind it will be plain to all observant persons, that in the ordinary process of cooking, especially of large joints, there may be ounces of flesh devoured by human beings that are never subjected to a sufficient amount of heat to destroy these spores. Take for example the cooking of a beefsteak or a large roast of beef. How many people are there who prefer that it shall be *under done*? And consequently in how many instances must the flesh and internal organs of animals be eaten, in the interior of which, numbers of bacilli and their spores retain their vitality?

As to the sale of tuberculous meat, he says: "I have frequently examined the carcasses of cattle that have been subjected to the 'stripping' process (well known to butchers in cases where the organs of the chest or belly are affected) and with which no fault could be found so far as the quality of the meat was concerned, and discovered masses of tubercles in situations that would usually have escaped detection in such superficial examinations as that to which meat is subjected by the ordinary inspection. Thus I have found tubercles in the deep lymphatic glands, and have seen advanced and extensive tubercular lesions in the bones of apparently healthy joints of meat when these have been cut through for sale, or for cooking purposes.

If those who advocate the sale of such carcasses were prepared to place on every piece of meat sold, a ticket declaring it to be a part of a consumptive animal, then those who chose to purchase would have no ground for complaint."

*Infection of Milk.*—This question is of even greater importance than infection of flesh, for the two fold reason that the former is largely imbibed by infants and generally in an uncooked state. Moreover, the cream and butter of such milk have been shown by Prof. Baud, of Copenhagen, to be as infectious, if not more so, than the milk itself.

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THE EFFECT OF FREEZING UPON IMPURITIES CONTAINED IN WATER?—The Massachusetts State Board of Health, (June, 1890,) publish experiments with seventy-six samples of water, and 236 samples of ice from fifty-eight localities, to answer the above question.

*In ice from polluted sources compared with water from the same, the experiments showed—*

I. That in the ice the color and salt had been removed.

II. That all but 13 per cent of the other impurities of the water, as shown by chemical analysis, had been removed.

III. The number of bacteria in the cubic centimetre were:

For *snow* ice (one sample) 1.246; for *clear* ice, (part of same cake as above,) 6; for clear ice from an unpolluted source, 0.

IV. The average of 12 samples from most polluted sources, 138. The number of bacteria varied much in different parts of the same cake.

From the examinations which have been made, it appears probable that when ice first forms in the surface of a pond or river, a considerable part of the impurity in the water near the surface is entangled in the first inch or less in depth, and that the ice which forms below this first inch, contains but a very small percentage of the impurities of the water. If snow falls upon the thin ice, causing it to sink so that the water from below saturates the snow, it will freeze without purification; or if rain falls upon the snow and freezes, the ice thus formed contains the impurities of the snow and of the rain water and of whatever else may have settled out of the air.

The method often pursued, of flooding the ice of a pond, or river, by cutting holes through it, give a layer of ice as impure as the water of which it is formed.

The purifying effect of freezing is greater upon substances in solution, than upon those in suspension. This is confirmed by the fact that a large part of the organic matter, one-half or three-quarters, and sometimes more than that is found in good ice, is of particles in suspension, and is readily removed by filter paper.

From the average of all of the water and ice used for ice supplies, which they have examined, they find:

The organic impurities of snow ice (the sum of the ammonias,)=69 per cent of the impurities of the water.

The organic impurities of all the ice (except snow ice,)=12 per cent of the impurities of the water.

The organic impurities of clear ice, = 6 per cent of the impurities of the water.

The *color* of waters was removed by freezing.

The *salt* of the waters was nearly removed by freezing.

Of Bacteria there were:

81 per cent as many in *snow ice*, as in the waters.

10 per cent as many in *all other ice* as in the waters.

2 per cent as many in *clear ice* as in the waters.

The results obtained lead to the conclusions:

That, while clear ice from polluted sources may contain so small a percentage of the impurities of the source, that it may not be regarded as injurious to the health, the snow ice, and any other, however clear, which may have been obtained by flooding, is likely to contain so large a percentage of the impurities of the source, and with these impurities, some of the disease germs which may be in the source, that the Board feels bound to warn the public against using ice for domestic purposes that is obtained from a source polluted by sewage, beyond that which would be allowable in a drinking water, stream, or pond, and that in general it is much safer to use for drinking water, and for placing in contact with food, that portion of the ice that is clear."



# PUBLIC HEALTH

## IN MINNESOTA.

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### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF JULY, 1890. DISEASES OF MEN.

Diphtheria.....	{ cases, 21
	{ deaths, 6
Scarlatina.....	{ cases, 22
	{ deaths, 4

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	12
Reported during the month.....	2
Killed.....	3
Released.....	0
Isolated.....	0

Remaining Aug. 1st, 1890, isolated or not accounted for..... 11

NOTE.—Most of these are cases exposed, and isolated for further observation.

DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA  
FOR THE MONTH OF JULY, 1890, REPORTED UP TO AUGUST 20.

(Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860)

Total Number of Deaths—970; 522 males, 448 females; 74% occurred in cities of more than 2,000 population. Ages, under 1 year, 43.4%; 1 to 5 years, 13.4%; 5 to 15 years, 7.62%; 15 to 30 years, 10.7% 30 to 50 years, 9%; 50 to 70 years, 8.86%; over 70 years,—

Measles.—6 deaths (3 males, 3 females,) in 5 localities, 5 counties; 33% occurred in cities. Ages, 81%, under 5 years. A continued decrease as compared with last month, and the same month last year.

*Scarlatina*.—2 deaths (1 male, 1 female,) both in one city. Ages, 1 between 2 and 3 years, 1 between 5 and 10 years. A continued decrease compared with last month, and the corresponding month of last year.

*Diphtheria*.—42 deaths, (24 males, 18 females,) in 12 localities, 12 counties; 61% occurred in cities. Ages, under 5 years, 38%; 5 to 10 years, 36%; 10 to 15 years, 19%; 15 to 20 years, 7%.

*Croup*.—6 deaths (3 males, 2 females,) in 2 localities, 2 counties; 20% occurred in cities. Ages, 80% under 5 years. A slight decrease compared with last month, and the same month last year.

*Typhoid Fever*.—17 deaths, (11 males, 6 females,) in 12 localities, 12 counties; 64% occurred in cities. Ages, between 10 and 15 years, 18%; 15 to 30 years, 53%; 30 to 50 years, 18%. A slight increase as compared with last month, but the same as for the corresponding month of 1889.

*Diarrhoeal Diseases of Children*.—277 deaths, (137 males, 140 females,) in 28 localities, 25 counties; 92% occurred in cities. Ages, under 1 year, 76%; between 1 and 2 years, 18%; 2 and 5 years, 4%. A decided increase over previous months, but the same as the corresponding month of 1889.

*Bronchitis*.—8 deaths, (4 males, 4 females,) in 5 localities, 5 counties. Ages, all under 5 years; 66% occurred in cities. A decrease compared with last month, and not one-half compared with same month of last year.

*Pneumonia*.—15 deaths, (9 males, 6 females,) in 10 localities, 10 counties; 66% occurred in cities. Ages, 66%, under 5 years. Mortality not one-half as great as last month, and much less than for the same month of last year.

MINNESOTA WEATHER SERVICE, (in Co-operation U. S. Sig. Service.)  
MONTHLY REPORT JULY, 1890.

Furnished by Corp. John Healy, Observer, Signal Service, in charge.

STATIONS.	ATMOSPHERIC PRESSURE.					TEMP. OF AIR.		Monthly Precipitation..	No. rainy days, .01 inch or more....	No. of cloudy days.....	No. of fair days.....	No. of clear days.....	No. of hail storms.....	No. of thunder storms..
	Mean reduced barometer..	EXTREME.				Monthly mean...	Monthly range..							
		Highest barometer.	Date .....	Lowest barometer.	Date .....									
Crookston.....						69.4 62	2.34 10							8
Duluth.....	29.952	30.290	9	29.561	28	66.2 44	3.51 12	7	14	10				8
Farmington.....						71.0 46	3.7 5	6	17	8				14
Grand Meadow.....						73.2 50	9.7 7	9						
L. Winnebigoishish dam.						68.0 39	2.74 11	9	12	10		1		8
Leech Lake dam.....						67.6 48	5.29 11	6	12	13				7
Markato.....	29.956	30.287	17	29.635	30	72.2 39	2.23 4	6	4	21				4
Medford.....						71.0 52	1.75 9	3	16	12		1		8
Minneapolis.....						71.0 37	1.90 10							
Moorhead.....	29.919	30.245	9	29.539	7	69.2 49	3.59 12	3	14	14				
Montevideo.....						70.6 43	1.88 6							
Morris.....						71.2 42	4.00 9	5	9	17	3			7
Northfield.....						71.6 43	8.2 6	2						
Pine River dam.....						69.7 45	2.39 8	12	11	8				8
Pokegama Falls.....						67.6 54	2.64 10							
Red Wing.....	29.945	30.210	18	29.613	7	72.1 44	1.80 9	2	14	15	1			5
Rolling Green.....						72.5 35	2.25 4	3	3	25				2
St. Charles.....						69.0 41	1.15 5					1		7
St. Paul.....	29.960	30.240	9	29.640	30	72.0 43	1.87 13	4	21	6				5
St. Vincent.....	29.616	30.284	9	29.440	28	68.7 52	2.32 10	4	16	11				5
La Crosse, Wis.....	29.198	30.250	18	29.721	6	73.2 46	1.46 7	9	7	15				
Mean.....	29.944	30.250		29.587		70.3 45.4	2.16 8.5	5.6	12.1	13.2				

WINDS.—Mean prevailing direction, south. *Maximum Velocity*.—Duluth, 36 miles per hour, direction N. W., date 30th; Mankato, 26, S., 23th; Moorhead, 75, N. W., 7th; Red Wing, 60, N. W., 13th; St. Paul 25, S., E. 28th; St. Vincent, 28, S. E., 7th; La Crosse, Wis., 42, W., 11th.

GENERAL REMARKS.—Normal temperature prevailed except in the extreme northwestern part of the state, where it averaged three degrees warmer than usual. The precipitation was deficient throughout the state; it being about 16 per cent short in the northern, and 53 per cent in the southern portion.

About 5 p. m., on the 13th, a violent tornado occurred at Lake Gervaise, 5 miles north of St. Paul, which caused the death of six persons, demolished houses, leveled and uprooted trees, etc. Three hours later, or at about 8 p. m., a similar storm passed over Lake Pepin, (Mississippi river,) 50 miles southeast of St. Paul, and overturned the steamer, "Sea Wing," which had more than 200 people aboard. One hundred (100) of these were drowned. The estimated damage to buildings in Lake City, (a few miles from the scene of the disaster,) was \$10,000.

THE METEOROLOGICAL RECORD—Is in more complete shape than last month. It is difficult to condense so much matter into the space at our disposal, and the points of observation are but 20. These, it is hoped, may be increased. Will any of our readers who know of any observations being taken which are not recorded in the above table, inform the Secretary?

VITAL STATISTICS.—TO HEALTH OFFICERS AND TOWN CLERKS: We have begun the final review of the Returns of Births and Deaths for 1888 and 1889, for immediate publication. Please look over your records for those years and if anything is lacking, supply it, not waiting for a request from me. If you do get a request from me, it will include a stamped and addressed envelope for reply. Please attend to it as promptly as I answer your inquiries.

This is census year, and your returns will be compared with your population; another reason for completeness.

TUBERCULOSIS.—No longer ago than December,\* 1866, Flint wrote: "*Tubercle*, is a morbid exudation, and the affections characterized by its occurrence are called *tuberculous*. "*Tubercles*, are classed by most writers, as of two kinds, the "*grey*, and the "*yellow*. The first, in immense numbers, in the "*lungs*, constitute *acute phthisis*, they also cause tuberculous "*peritonitis*, and *meningitis*. Laennec called them the germs of "*tubercle*, and supposed that they developed into the latter, but "*there is no foundation for the idea*. The microscopic character of the true—the yellow—tubercle is amorphous granular "*matter*, inclosing, in more or less abundance, corpuscular "*bodies* which are characteristic, belonging exclusively to this "*exudation*, called *tuberculosis corpuscles*. They are round, "*oval*, or polyhedral, granular in appearance, devoid of nuc-

"Ici, or nucleoli, unaffected by water, rendered transparent by "acetic acid; and they are further distinguished by their small "size, their average diameter being from 1-2000 to 1-1200 of "an inch. A tuberculous deposit in the lymphatic glands, especially the superficial glands of the neck, characterizes the "affection called *scrofula* or *scrofulosis*, identical with tubercu- "losis."

This statement supplemented by the cellular pathology of Virchow, fairly represents medical opinion up to 1882, when Koch announced the discovery of bacillus tuberculosis, and defined phthisis to be "the result of a specific, morbid irritant,— "the bacillus—acting on the tissues, which are so far devital- "ized, that they are not able to cope with the irritant." This is now the accepted belief of many physicians, by whom the discovery of the bacillus is constantly used as proof of the existence of the disease. We can in this way trace tuberculosis: transmit it to animals experimentally, and bring into one, clearly defined, class, a long list of diseases hitherto imperfectly understood, tracing them to a common, and to some extent, a preventable, cause. If bacteriology had done nothing more than this, it would be enough to persuade thoughtful physicians to give it respectful consideration.

CONSIDERABLE interest was aroused, last winter, by the sensational statements of a young English woman, I believe, in a lecture in Duluth. She is quoted as having said, that, "we should have a leper hospital for the state, "for leprosy is among you 160 strong, and no place is safe." The report published in this number, by Dr. Hansen, who came here to study the disease, is submitted as the truth of the matter. It states the view of the disease, which has guided the State Board of Health, in dealing with leprosy for the last 15 years.

Dr. Hansen saw all the cases in the State; and all had been under the careful observation of the State Board, in most cases for years, before. Whenever a new case is suspected it is promptly reported, and kept under the observation of the State Board. Every patient has his own bed and room, towels, and wearing apparel. In no other section of the temperate zone, outside, Norway itself, has leprosy been more closely observed, or had better opportunity to exhibit its true char-



acter, for there has been unobstructed immigration for 40 years. During this time the 160, since found to be leprous, immigrants have been coming into Minnesota, Wisconsin, and Dakota, with many more who have leprous relatives at home. They have been submitted to no restraint, or even to systematic observation, till the State Board of Health of Minnesota undertook both, so far as this State is concerned. The outcome of all these investigations, is simply this, which it is hoped every newspaper in the State will reprint. *That, though two of the men, conceded to be the most competent to recognize the disease, in Norway, and therefore, in the world, Prof. Boeck, and Dr. Hansen, came to this State for the express purpose of studying the spread of lepra, neither found any reason to believe that it has spread here, in a single case, by infection.* Dr. Hansen's report covers the ground. Nevertheless this Board will not remit the vigilant oversight, which it has maintained since 1875, of every one who may be suffering from this disease, or suspected of it. All such cases are reported by individuals, by physicians, and by Health Officers, and are immediately investigated, and go upon our register.

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REPORTED EXPLOSION OF GASOLINE STOVE,—In Fergus Falls, noted in the daily papers, turns out to have been a case of carelessness. Dr. Cole, Health Officer, replies to inquiry of Secretary: "Stove did not explode. Mrs. M. spilled gasoline on her dress, and on the floor under the stove, and tipped over the can. The gas escaping from the ground, ignited by the flames, of the stove, set fire to her dress, to the gasoline on the ground over which she stood, and exploded the can. She thought that on her dress, was water. Stove all right, and still in use.

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THE PREVENTION OF INFECTIOUS DISEASE requires something more than isolation of those who are victims of severe attacks, and the disinfection of their persons, discharges, clothing, and bedrooms, after recovery. The mild cases need looking after, to prevent the spread of the infection, even more than the serious ones, because people take care to avoid the last, but there are still those who can see no danger in the first. Note what is said in the first statement under "Questions and Answers," in this number. The difficulty is, often great, but the duty is none the less on that account. We are very fortunate, in Minnesota, in having a strong popular sentiment in favor of the use of all their powers, by Local Boards of Health, when

threatened by infectious disease. The State Board has never received a petition against undue strictness of these Boards, but it is quite common to receive strong protests against supposed carelessness, in the isolation of persons, thought to have diphtheria, or scarlatina, or to have been exposed to their infection. Boards of Health are given the largest of discretionary powers for this very purpose. A study of Chapter 132, laws of 1883, as amended, will show just what those powers are, for the control of infectious diseases of men, and Chapter 200, laws of 1885, gives still more authority, in diseases of domestic animals. The diseases of men which cause the greatest sickness and mortality, known to be infectious, are, in order of mortality, *diphtheria*, *typhoid fever*, *scarlet fever*, *measles*. Note, that, with the exception of typhoid fever, they are diseases of children, and are therefore met in families where children are. I mean children under 15 years old, one might better say 10 years, for the great majority are under that age. Outside cities, the most of families live in separate houses, each on its own lot. This arrangement makes the isolation of infected persons, in country districts, a comparatively easy matter, and also in most villages, if the Local Board makes it distinctly understood that its regulations have been deliberately adopted, to secure the greatest amount of safety for the patient, his family, and the community, and that they will be enforced. The fact that children are greatest sufferers, limits the field of infection, largely to the home, and the house, with its furnishings, and the clothing of its occupants. Aside from the immediate sick, these things are the preservers or carriers, of the infectious poison of these diseases.

It is the children, too, having slight attacks, "just a little sick, but not enough to be kept at home, or put to bed," who are frequent means of carrying these diseases to other children. This danger will be greatest where children are crowded together either in public places, or in private houses. It will be greater there, than in the open air, where it is least.

The, not uncommon, belief of mothers, that measles, whooping cough, and scarlet fever, are inevitable, in childhood, and it is therefore, best to take advantage of mild attacks of these diseases, to deliberately expose healthy children to the infection, that they may "catch it and have done with it," must be sedu-

lously opposed, and overcome. Measles is constantly "caught" in this way, even by children of mothers who would not "take the chances" with scarlet fever. There is a mistake as to the danger of measles which ought not to be permitted to go on any longer, without emphatic contradiction. It is that "measles" is rarely fatal, and that the affections which frequently follow "it, are usually of trifling importance." The facts are the very reverse. For three years, (1887-89,) since the writer has had charge of the vital statistics, of the state, measles has caused nearly as many deaths as scarlatina, (619 to 675,) and it is common experience, among medical men, that, it leaves affections of the ears, throat, and glands, which contribute largely to the number of cases of chronic ill-health, and permanent disability. Mothers must be taught that the occurrence of any infectious disease is to be avoided; that the longer a child lives, the less likely he is to contract such disease; or if he do get it, to have a fatal attack. Another, and common, but very mistaken, belief is that to "catch an infectious disease from one having a mild attack, is to insure another just as mild attack." There is abundant evidence to the contrary. These opinions must be constantly and persistently disproved, if we are to have hearty and intelligent support in taking the measures needed to crush out infectious disease.

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#### DISEASES OF DOMESTIC ANIMALS.

GLANDERS IS BEING DISTRIBUTED IN OUR STATE, NOW, IN TWO WAYS. First—*By Herds of Infected Horses brought in from the West*, and driven around from place to place, till sold. Such a herd caused all the trouble and expense to individuals, the county, townships, and the state, reported in the last number. People who buy in this way, have no one but themselves to blame, if sold. We are only concerned with the spread of glanders, by these animals. Local Boards will find it safest to compel such irresponsible parties to produce satisfactory evidence, that the herd is sound, before permitted to enter, or trade, in their districts. *Another mode of spreading glanders, is by the horses, or mules, used by threshing crews.* Several instances of this kind came to our notice last year, and we give timely warning, to the Chairmen of Township Boards, now. Put your associates on their guard, and all others inter-



ested, and report the facts immediately to this office, so that the matter may be followed beyond your district if need be.

THE SUSPECTED RABIES,—In a dog, cat, and cattle, reported last month, has, fortunately, failed to develope, and no new cases are suspected.

### QUESTIONS AND ANSWERS.

WE HAVE REASON TO BELIEVE THAT A CASE OF, APPARENTLY, SIMPLE "SORE THROAT," IS REALLY DIPHTHERIA. WHAT SHALL WE DO?—Isolate the sick person till the real character of the sickness is known, and be guided by that knowledge in the after-management. *For the law*, see Chapter 132, Laws of 1883. *For the Circular and Regulations of the State Board of Health*, apply to the Secretary at Red Wing. See also the file of PUBLIC HEALTH IN MINNESOTA which belongs to your Board, for constant reference to some practical point of management. The question quoted above is, in substance, a very common one by Chairmen, and members of local Boards of Health, who, having no resident physician, are sometimes called upon to act promptly. They have the printed matter above referred to; perhaps they know of instances where delays have been harmful, and they have learned that no avoidable chances should be taken, in dealing with diphtheria. Medical men, most familiar with it, frankly confess their inability to be certain in mild cases, or if the symptoms are those of croup only. Section 18 of the law, (Chapter 132, 1882,) requires Local Boards of Health, "When informed of a case of infectious disease, to examine into the facts, and if the disease *appears to be* 'of the character above specified, (a contagious or infectious disease,) they shall 'adopt such quarantine and sanitary measures, as may in their judgement, 'tend to prevent the spread of the disease, etc.'" If the suspected disease were small pox, no one would doubt the necessity for the prompt isolation of every individual suspected, by the Local Board of Health, of exposure. Still more should every parent of children insist that the same rule be applied for diphtheria. A disease that kills more than 700 little children in our own state every year, while small pox has killed but six of all ages in five years, justifies all legitimate restraints.

This rule, for all infectious diseases, is based on the common sense view of the matter. It is best for the sick; for his own family; and for the community in which he lives. For the sick, as calling early attention to his care, and usually, medical aid, when such service can be of most use, by care, advice, or treatment. For the family, as separating a possible cause of infectious disease, and caring for it, in the best way for recovery, while reducing the danger, for others, to the minimum, and, if need be, securing prompt and efficient outside care or other help. For the community, for the above reasons, and because, in this way, necessary, public, care and expense, are best, and least.

### THE HEREDITY OF LEPRO. (LEPROSY.)

BY G. ARMAUER HANSEN, M. D., OF BERGEN, NORWAY.

I HAVE, already, spoken several times on this subject, the last time in the International Congress, at Copenhagen, in 1884. When I spoke there against the persistent old opinion that lepra was hereditary, my opinion was based upon theoretical considerations mostly. I regarded lepra as a specific disease, caused by the bacillus leprae, and urged that a specific, in this case, a parasitic, disease could not be heredity, as the transfer of the bacillus to a person must be classified as infectious, not heredity:

I had before (in a Norwegian publication, in 1874,) called attention to the



fact, that there are, in Norway, places where there would have been lepers, if the disease had been hereditary, many of the people being descendants of, or nearly related to, lepers.

Prof. Wm. Boeck, deceased, visited North America, in 1869, to study the existence of leprosy, among the immigrated Norwegians. He found lepers in whom the disease had broken out, from two and one-half to fourteen years after their arrival in America, and thought that he could conclude that the disease, in these cases, was inherited, as all of them had leprous relatives in the old country. He seems to have forgotten, that he himself, and Dr. Danielson, in their book on lepra, mentioned the case of a Dutchman, who became a leper ten years after he returned from the colonies, and yet it manifested itself only ten years later. Increasing the interval by fourteen years, between the possibility of an infection, and the appearance of the disease, will not exclude this possibility of infection, especially when it is considered that patients always date the beginning of their disease too late, and further, that we do not, probably, know the first symptoms of the disease. The more I study it, the more I am convinced of the probability, that, the prodromes of the disease, spoken of by Drs. Danielson and Boeck, (said to consist mostly of rheumatoid pains,) really are the first symptoms of the disease; but the trouble is that we cannot prove them such, as long as the disease cannot be diagnosed by other symptoms. By the liberality of my friend, Dr. Boeckman, of St. Paul, Minnesota, I was, in 1888, enabled to visit North America, to study the question there. By the kindness of my colleagues, Dr. Hoegh, of Minneapolis, and Dr. Gronvold, in Goodhue county, Minnesota, who, during their long residence in America, have had their attention directed to lepra, I have found that about 160 lepers have come, from Norway, into the States of Wisconsin, Minnesota, and Dakota. Many of these lepers have been married, and several of them have left numerous descendants. Besides these, there are many Norwegian immigrants, who have descended from lepers, or have near, or more remote, relations in Norway. It will be seen that there is plenty of material for the heredity of lepra. Heredity is something, also, so tenacious, that it could hardly be destroyed by moving over from Europe, to America, at least no observations made, point that way. To prove the heredity of lepra, it would be necessary to find some person in America, who has become leprous, without any exposure to contagion, but who descends from a leprous family.

I cannot, here, relate all my observations in detail; I will only tell what I have found in regard to the occurrence, or rather, the disappearance of lepra, in America.

Of about 160 lepers, who have immigrated into the three states named, 13 are alive, whom I have seen, and perhaps three or four more. All the others are dead. Of all of the descendants of lepers whom I have seen, and that has included the great grand children, of some of them, not a single one has become leprous. This is, in short, the result of my observations, and there is, in my opinion, only one explanation of it, that lepra cannot be hereditary. Some one might, also, conclude that the disease is not contagious, since it has not spread at all, but such reasoning would hardly be correct. We do not yet know in what way lepra is transmitted. It is probable that an inoculation is necessary, and I have, in my discourse at the Copenhagen Congress, pointed

out how favorable the circumstances of the Norwegian country population were for such transmission. How is it, in this respect, in North America? Quite differently. There is, perhaps, much to remark in regard to the civilization in America; but in one respect the country is highly civilized, in so far as the people keep themselves clean. The first thing the, by no means, scrupulously cleanly Norwegian peasant learns over there, is to keep themselves clean. Besides the houses are larger and more spacious, so that all lepers, I have seen, have their own bed, in their own room. This, connected with cleanliness, is certainly, a sufficient isolation, to prevent any transmission of lepra. As, besides this, lepra is not heredity, it is easy to understand, that the disease will not thrive, in America. It cannot be seen that the climate is unfavorable to the disease. In the patients I saw over there, the lepra flourished as well as here in Norway. As I stated above, the beginning of lepra cannot be, for some time, recognized. As Prof. Wm. Boeck, met with patients in America, where the disease was first recognized fourteen years after their arrival, so I have seen several similar cases. This proves that it will be impossible to prevent immigration of lepers. Neither the patient himself, nor a well posted physician, can make the diagnosis, much less a physician who does not know the disease. I have seen two cases of syphilis, in America, that were diagnosed as lepra by American physicians. I have before demonstrated that the occurrence of lepra in Norway, and its present disappearance, can be best explained by the supposition of the contagiousity of the disease, and since I have not, now, been able to find, in North America, a single case of inherited lepra, the doctrine of the heredity of this disease, will, I suppose have to be dropped, so much the more, as the possibility of transmitting the disease by contagion, must be considered proved by Dr. Ozmann's experiment.—[*Reprint from Virchow's Archives fur path anat und physiol, und fur klin med.* 114, Band. 1888.

#### BOOK NOTES.

THE SECOND REPORT OF THE ROYAL COMMISSION APPOINTED TO INQUIRE INTO THE SUBJECT OF VACCINATION. PAGES 317. LONDON, 1890.

This great Blue Book is the second of the testimony, with accompanying statistics and tables. With the license which the Commission gives to witnesses, the evidence resembles "The Brook," in a single particular, it is likely "to run on forever." We have read both volumes of testimony, and put them within easy reach, for some parts deserve reading several times, as they are the best illustrations we know, in medical literature, of "How not to do it," officially exemplified. Job, with the actual knowledge of some of the members of the Commission, of its subject matter, would have had occasion for his entire stock of patience, and have pretty well exhausted it.

It is not to be expected, (it may be fairly be assumed that it was not intended,) but there is a rich vein of humor running through some of the testimony, very likely unconscious, but all the richer, on that account. Of this character, is the testimony of "Mr. Charles Creighton, M. D.," as he is called in the report. It reads like a labored attempt (of a Punch contributor,) to be witty at the expense of the "Drs. Dryasdust," who settle the practical value of an every day method of preventing disease, in common use, by reference to the reports and statistics of the fathers of the practice; though they were dead before its severest trial was had, and its best record made. Dr. Creighton has heightened the comic effect by passing the testimony of the fathers of vaccination through the alembic of his own cool, and unbiased, intellect, and offers the result as an original view of the subject,

for the instruction of the Commission. His testimony is full of "richness" in this direction, not at all diminished by the fact that he does not mean it, but professes to have a "new view" never before presented, which "contention" seems on the whole, to be proven. It is very evident that the anti-vaccinationists intend to bring in more heavy guns, and are of the opinion that those captured from the enemy, deserters as Creighton, are most effective. They must not fail to bring out Crookshank and his test tube battery of Bacteria and Fungi, nor must they be permitted to omit the valiant Chevalier of Leicester, who, as Barnum would say, accomplishes the unparalleled feat of protecting 15,000 little ones from small pox, by isolation, cleanliness, and disinfection, but finds it needful, on the first alarm, to seek vaccination for himself. Till all the evidence is in, it would be useless to attempt to review any part of it thoroughly. Nothing has yet appeared to shake the confidence of physicians and people in vaccination, and re-vaccination, as safe, and the surest protection we have, against small pox.

One might easily infer that isolation, cleanliness, and disinfection, had never been appreciated before the Leicester, and similar, experience. It is a very old story in this country, as a reference to the instructions of any Board of Health will show.

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### SANITARY INSPECTION REPORTS.

BEAVER CREEK (V.) ROCK Co., DR. S. C. PLUMMER, H. O., MAY 19, 1890.—In submitting this report of the May inspection of our village, I would say that in making the inspection I have been accompanied by one other member of our Board, and that the general sanitary condition is good.

1. The privies are all of the vault, or "hole-in-the-ground" variety, and their number is about equal to the number of buildings used as residences in the villages. It is much to be regretted that the use of this kind of privy is so prevalent, as there is no method of disposal of refuse so unsanitary. No place is so favorable for the development of germs of disease as a partially filled privy vault. I would recommend that the people be informed of this and that each householder be provided with the tract of the State Board of Health on the "Earth Closet," as well as the one on "Domestic Hygiene." Several of the privies are too near the dwellings, and have been ordered removed. In several instances, also, they are so near to wells used as sources of drinking water as to make contamination probable. Fortunately, however, in the majority of instances the privies bear such a position relative to the dwellings and wells that, in all probability, the drainage is away from the latter. The topography of the village is such that with a little care as to locating wells and privies they can be gotten into such relative position as to little jeopardize the purity of the water. There are no cess-pools in the village and no collection of fluid or semi-fluid filth.

2. There are few collections of refuse. A few manure piles should be removed, and in the rear of a few residences a small amount of kitchen refuse has been thrown out. The location of these have been noted and the responsible parties will be notified to remove them. It is recommended that a greater amount of kitchen refuse be disposed of by burning in stoves.

3. There are two public wells in apparently safe locations. A considerable portion of the population use the water from them. All of the other wells are too near privy vaults to be safe.

4. There is no system of sewerage and no drains.

5. All lots are dry; all are clean with the exceptions mentioned under No. 2, and a few on which there are pig-stys in bad condition, the locations of which have been noted and whose owners will be notified.

6. There is one butcher shop in first-class condition. The only stockyard belongs to the railroad company, (C., St. P. M. & O.) and is occupied only part of the time, stock being kept there only a few days at a time preparatory for shipping or subsequent to being imported to this point. The yard needs cleaning and the railroad company will be notified.

A new creamery has just been erected but has not yet been put in operation.



The slaughter house is just outside the limits of the village, one-half mile from the inhabited portion of the village.

7. Domestic animals are not crowded together and are in good condition.
8. Vaults are covered in when they become offensive. The offal and small amount of garbage which is publicly disposed of is hauled to a ravine outside the village.
9. No public water supply except the two wells mentioned under No. 3.
10. No public sewer system.
11. One school house, well located and in good condition.
12. One hotel, well located but with livery stable quite near; the latter in good condition except that the manure is allowed to accumulate in too large quantities.
13. No swamps nor marshy lands; one stagnant pool due to water being pent up by railroad embankment. Railroad will be notified to drain this.

LESUEUR (B.) LESUEUR CO., DR. W. H. FISHER, H. O., AUG. 6, 1890.—Our borough is in a very fine, clean condition now. Alleys are graveled and dry, no manure or rubbish of any kind is allowed to be dropped, or placed in the alleys, which makes a very clean appearance. I think we have taken the lead in that respect in small villages or boroughs, and a number of much larger cities would do well to pattern after us in the matter of not allowing manure or rubbish to be thrown into the alleys. It caused a good deal of excitement for a few weeks, but we were persistent and vigorously pressed them until the last one yielded, and now all are glad. No manure heaps are allowed in town also. I have first-class assistance on the Board. Last spring the council appointed the leading lawyer and a first-class merchant and business man (two new members) on the Board with me, and we proceed according to law, and let the people know that there is a Board of Health in town.

LAMBERTON (V.) REDWOOD CO., DR. L. S. CRANDALL, H. O., MAY 5, 1890.—Due notice of two weeks was given by publication in the *Leader*, a weekly paper published in our village, to property owners and others to clean up all garbage and filth of any kind detrimental to health, and I am happy to report that said notice has been complied with to the letter, and that our village is now in a good, healthy condition, and that our citizens are willing to assist us in keeping it so.

KENYON (V.), GOODHUE CO., DR. G. H. OVERHOLT, H. O., MAY 20, 1890.—In the general appearance and cleanliness of our village over former years there is considerable improvement. The privy vaults of our hotels and school house are so constructed that boxes are used in which the excreta can be drawn away and thrown upon the fields, thereby preventing percolation into wells. Our water supply is derived from wells and cisterns; that from the former, which is pure and wholesome, is used for drinking and cooking, and that from the latter for washing purposes. In the matter of drains and sewers there is opportunity for considerable improvement. As to trades and employments, which come under the supervision of the Health Officer, we have three creameries, one tannery and two slaughter houses. The creameries drain all their washing and cleansing waters, and considerable butter milk, into Pearl creek and the Zumbro river. The water of Pearl creek, from the point where said drainings enter it to its termination into the Zumbro river, is wholly unfit for any purpose and has anything but a pleasant smell. The river, being much larger than the creek, is not so much contaminated.

BIRD ISLAND (V.) RENVILLE CO., DR. F. L. PUFFER, H. O., JUNE 16, 1890.—*To the Board of Health:*—I have delayed my annual report a little this year, in order to allow the village authorities time to drain a slough as ordered by the Board. The May Inspection found the village in a fair sanitary condition. The work done in former years has had its effect in instructing the people, and I find them every year more willing to carry out the instructions of the Health Officer. The wet weather has caused some stagnant water but this is being drained off and now the village is in good shape for the summer. There has been but one or two cases of contagious disease during the year, and with a strict quarantine and isolation these have soon been stamped out without spreading.



MINNESOTA STATE BOARD OF HEALTH AND VITAL STATISTICS,  
 SECRETARY'S OFFICE, RED WING, August 15, 1890.

Quarterly Supplement to Report on Vital Statistics, }  
 Second Quarter, 1890. }

NOTE.—In the following table of death causes

**Puerperal Diseases** includes *Puerperal Fever* and *puerperal septicæmia*.

**Diarrhæal Diseases** includes *Diarrhæa*, *Cholera-Morbus* and *Dysentery*, all of over five years of age.

**Diarrhæal Diseases of Children** includes intestinal diseases, of all under 5 years, during the summer months, as also those reported as "*Cholera Infantum*."

**Erysipelas** includes *Septicæmia*, *Pyæmia* and *Phagedænia*.

**Enteritis** includes diseases of the stomach.

**Other Tubercular Diseases** includes *Scrofula*, *Tubercular Peritonitis*, *Tubes Mesenterica*, *Hydrocephalus*, and *Tubercular Meningitis*.

**Unclassified** includes those reported as from unknown cause, and those which we have been unable to classify.

**Not Classified** includes deaths from certain specified causes, not included in the report following.

See page 48 for comments concerning mortality from certain diseases.

STATEMENT OF BIRTHS—SECOND QUARTER  
 OF 1890.

A SUMMARY OF THE RETURNS OF BIRTHS FOR THAT QUARTER FILED IN THE  
 OFFICE OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO  
 AUGUST 15, 1890.)

GRAND TOTAL, 5945.	2D QUARTER, 1890.		2D QUARTER, 1890, BY MONTHS		
	Total.	Per Cent.	April.	May.	June.
Total .....	5,945	100.00	2,172	2,045	1,728
Males.....	3,097	52.09	.....	.....	.....
Females.....	2,830	47.61	.....	.....	.....
Unknown.....	18	.30	.....	.....	.....



DEATHS—FOR THE SECOND QUARTER OF 1890.

OF THE SECRETARY OF THE STATE BOARD OF HEALTH (UP TO AUGUST 15TH, 1890).

Per cent of deaths during the quarter	SEX.		SOCIAL STATE.				AGE.											NATIVITY.				PARENT NATIVITY.					Localities Invaded.*	Counties.*								
	Male.	Female.	Single.	Married.	Widowed.	Unknown.	Under 1 year.	1 to 2 years.	2 to 3 years.	3 to 4 years.	4 to 5 years.	5 to 10 years.	10 to 15 years.	15 to 20 years.	20 to 30 years.	30 to 40 years.	40 to 50 years.	50 to 60 years.	60 to 70 years.	70 to 80 years.	Over 80 years.	Unknown.	City, Village or Tp	Other Minnesota.	Other U. S.	Foreign.			Unknown.	Both American.	Both Foreign.	American Father, Foreign Mother.	Foreign Father, American Mother.	Unknown.		
1.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
1.44	16	24	24	16	.....	.....	2	5	3	1	1	1	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	12	2	1	1	.....	3	11	1	1	.....	.....	.....	
1.66	26	20	20	25	1	.....	4	4	4	4	2	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	14	5	4	1	.....	4	17	.....	2	.....	8	6	
4.01	57	54	53	53	1	1	.....	6	6	7	7	16	10	1	2	.....	.....	.....	.....	.....	.....	.....	.....	30	10	12	5	11	43	13	3	2	1	.....	.....	
.87	11	13	12	11	.....	.....	4	2	2	1	3	1	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	34	14	3	2	12	34	2	5	1	18	15	.....	
.29	3	5	3	3	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	3	5	1	.....	1	10	1	1	.....	6	6	
1.30	22	14	8	6	.....	.....	1	.....	.....	.....	.....	1	2	3	7	2	3	1	1	.....	.....	.....	.....	4	2	2	13	1	4	13	.....	1	4	.....		
.76	12	9	6	3	.....	.....	5	.....	.....	.....	.....	.....	1	.....	2	2	2	.....	2	.....	.....	.....	.....	3	2	3	4	.....	2	8	.....	2	.....	.....		
1.19	.....	33	.....	33	.....	.....	.....	.....	.....	.....	.....	.....	2	16	12	3	.....	.....	.....	.....	.....	.....	.....	3	1	4	1	.....	1	6	1	.....	1	6	6	
.29	4	4	2	1	1	.....	1	.....	.....	.....	.....	.....	1	1	1	.....	.....	2	.....	.....	.....	.....	.....	1	1	1	2	.....	1	2	.....	1	1	3	3	
2.92	42	39	42	42	.....	.....	34	6	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30	6	4	2	.....	14	19	1	6	2	.....	.....	
.87	11	13	3	7	3	.....	30	5	1	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25	3	10	1	5	25	2	1	6	10	9	.....	
3.50	62	35	62	.....	.....	.....	50	6	5	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26	6	3	.....	8	22	1	2	2	17	15	.....	
6.90	112	9	81	30	1	30	8	8	1	2	7	3	3	13	7	7	14	8	.....	.....	.....	.....	.....	43	17	26	24	2	35	60	.....	9	8	.....	.....	
2.13	26	33	5	15	4	2	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	2	12	4	2	1	1	.....	29	8	23	19	.....	23	42	1	1	12	31	29	
11.34	147	167	83	57	5	2	4	3	.....	.....	.....	.....	.....	.....	3	6	6	5	6	1	.....	.....	.....	.....	2	9	15	4	11	.....	1	10	.....	.....		
1.52	28	14	70	89	6	2	5	2	.....	.....	.....	.....	4	11	17	62	33	15	12	3	.....	.....	.....	14	17	32	80	4	23	88	.....	2	34	.....	.....	
4.33	61	59	20	37	4	.....	11	2	1	.....	.....	.....	1	.....	1	3	1	.....	1	.....	.....	.....	.....	13	4	3	8	.....	8	13	1	1	5	.....	.....	
2.27	31	32	28	5	.....	.....	3	1	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	4	2	2	1	1	11	.....	1	1	8	8	.....
7.04	117	78	79	33	3	2	30	13	6	1	3	5	3	1	10	9	9	9	18	.....	.....	.....	.....	41	10	25	38	3	27	65	1	6	18	.....	.....	
1.84	34	17	7	7	3	.....	1	.....	.....	.....	.....	.....	.....	.....	2	4	13	4	2	6	.....	.....	.....	26	14	18	18	2	20	45	2	1	10	35	27	
5.92	99	65	99	.....	.....	.....	99	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2	11	19	.....	10	19	.....	.....	5	.....	.....	
2.20	87	24	28	4	.....	.....	15	8	4	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	5	7	2	.....	7	20	2	2	1	9	8	.....
9.31	121	134	5	62	57	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5.96	131	34	80	47	3	1	4	4	3	11	8	11	26	12	16	13	9	8	.....	.....	.....	.....	.....	.....	38	85	1	22	65	.....	1	39	.....	.....		
1.44	155	162	91	57	5	2	34	7	6	3	5	8	10	11	20	10	19	19	.....	.....	.....	.....	.....	.....	40	93	1	25	78	.....	31	62	.....	.....		
8.70	133	108	125	7	1	116	3	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
	.....	.....	1014	390	86	11	495	70	42	27	28	68	42	49	139	95	86	111	108	89	47	5	581	152	281	466	21	330	854	23	78	216	.....	.....		
	1501	1269	741	391	132	5	347	69	40	28	15	67	45	51	143	123	69	60	72	80	60	.....	448	159	282	362	18	259	789	25	47	149	.....	.....		
	1501	1269	1755	781	218	16	842	139	82	55	43	135	87	100	282	218	155	171	180	169	107	5	1029	311	563	828	39	589	1643	48	125	365	.....	.....		

\*Average for the quarter.

TABLE SHOWING MORTALITY AND DISTRIBUTION BY LOCALITIES OF CERTAIN DISEASES FOR THE FIRST SIX MONTHS (JANUARY—JUNE), FOR FOUR CONSECUTIVE YEARS—1887, 1888, 1889, 1890:

	Years.	DEATHS BY MONTHS.						DEATHS BY QUARTERS.					
		January.	February.	March.	April.	May.	June.	1st Quarter.			2d Quarter.		
								Total.	Localities Invaded.	Counties.	Total.	Localities Invaded.*	Counties.*
Total from all Causes.....	1887	747	717	927	1,150	1,047	1,139	2,891	.....	.....	3,336	.....	.....
	1888	1,217	1,220	1,378	1,226	1,281	1,098	3,815	.....	.....	3,605	.....	.....
	1889	1,137	1,228	1,199	1,096	984	905	3,464	.....	.....	2,985	.....	.....
	1890	1,365	931	844	917	957	826	3,140	.....	.....	2,770	.....	.....
Measles.....	1887	4	17	27	32	37	28	48	.....	.....	97	.....	.....
	1888	5	9	15	28	56	30	29	7	5	114	21	16
	1889	23	26	25	17	28	19	89	24	19	59	16	13
	1890	3	3	3	6	26	8	8	3	3	40	8	7
Scarlatina.....	1887	17	26	27	21	15	17	70	.....	.....	53	.....	.....
	1888	11	14	18	5	16	9	43	8	7	30	6	6
	1889	27	32	26	45	45	29	85	20	16	109	22	17
	1890	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Croup.....	1887	18	21	13	23	7	10	52	.....	.....	40	.....	.....
	1888	21	27	24	19	17	9	72	17	13	45	11	10
	1889	26	27	19	23	13	3	72	18	16	39	11	9
	1890	19	9	9	5	11	8	37	10	10	24	6	6
Diphtheria....	1887	59	48	28	30	35	62	135	.....	.....	127	.....	.....
	1888	117	73	55	64	47	44	245	40	27	155	25	19
	1889	78	63	67	77	70	43	268	31	21	190	27	22
	1890	64	49	38	38	42	31	151	25	19	111	17	16
Typhoid Fever....	1887	37	15	19	18	21	32	77	.....	.....	71	.....	.....
	1888	57	35	36	30	31	27	128	21	18	88	17	13
	1889	32	27	32	26	22	23	91	20	15	70	14	13
	1890	44	17	12	18	4	14	73	16	14	36	8	8
Diarrhoeal Diseases of Children....	1887	3	9	12	29	26	175	24	.....	.....	230	.....	.....
	1888	8	11	5	6	4	19	24	4	4	29	7	7
	1889	21	14	16	9	26	74	51	9	8	109	11	10
	1890	12	14	17	13	19	49	43	9	8	81	10	9
Phthisis.....	1887	56	60	99	117	139	87	215	.....	.....	339	.....	.....
	1888	100	101	121	100	135	87	322	63	39	322	65	40
	1889	95	100	102	102	105	81	297	64	43	288	57	34
	1890	129	94	91	104	105	105	314	61	36	314	61	39
Bronchitis.....	1887	37	31	40	51	25	27	108	.....	.....	103	.....	.....
	1888	47	33	56	62	68	35	136	26	22	155	20	17
	1889	39	58	46	32	21	12	143	20	18	65	13	11
	1890	46	17	21	27	22	14	84	12	12	63	9	8
Pneumonia and Pleurisy	1887	56	57	68	94	37	30	181	.....	.....	161	.....	.....
	1888	97	102	117	115	137	74	316	54	33	326	51	35
	1889	91	144	124	88	62	42	359	75	44	192	39	28
	1890	205	110	75	70	84	41	390	66	40	195	35	27

\*Average for the quarter.

[NOTE.—This table compiled from the corrected returns of the years 1887, 1888, 1889, and from the incomplete returns of 1890. The last fall a little short of the exact truth, but are sufficient for this purpose. This table enables a comparison of the mortality and distribution of certain diseases for the first half (January—June), of four consecutive years].

*Measles.*—Deaths in 1887, 145; in 1888, 143; in 1889, 148; in 1890, 48. Maximum for the four years in May. Minimum for 1887, 1888 and 1890 in January. For 1889 in April. The distribution was, for 1888, in 28 localities; 1889 in 40, and in 1890, in but 11.

*Scarlatina.*—Deaths in 1887, 123; in 1888, 73; in 1889, 194; in 1890, but 17. The average monthly mortality was 23, greatest in May, least in June.

*Croup.*—Mortality and distribution have decreased for four years. Mortality for 1887 92; for 1888, 117; for 1889, 111; for 1890, but 61.

*Diphtheria.*—Mortality for 1887, 262; 1888, 400; 1889, 398; 1890, 262. The distribution record is encouraging. In 1888, 65 localities invaded; in 1889, 58; in 1890, 42.

*Typhoid Fever.*—Deaths in 1887, 143; in 1888, 216; in 1889, 160; in 1890, 109. Distribution in 1888 in 38 localities; in 1889, in 34; in 1890, in 28.

*Diarrhoeal Diseases of Children.*—The greatest mortality is in the last half of the year (in July of 1887, and in August of 1888 and 1889). The deaths of 1888 were 53 in 11 localities; in 1889 160 in 20, and 1890 124 in 19.

*Phthisis.*—Deaths and distribution in 1888, 585 in 128 localities; in 1889, 585 in 121; in 1890, 628 in 122.

*Bronchitis.*—

Deaths..... 1887. 1888. 1889. 1890.  
211 291 208 157

Distribution by localities..... 46 33 41

*Pneumonia and Pleurisy.*—

Deaths..... 342 642 551 583  
Distribution by localities..... 105 114 101



# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

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## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF AUGUST, 1890. DISEASES OF MEN.

Diphtheria.....	{ cases, 61
	{ deaths, 12
Scarlatina.....	{ cases, 6
	{ deaths, 0

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	11
Reported during the month .....	3
Killed.....	3
Released.....	0
Isolated.....	0

Remaining Sept. 1st, 1890, isolated or not accounted for..... 11

NOTE.—Most of these are cases exposed, and isolated for further observation.

## MINNESOTA WEATHER SERVICE—REPORT FOR AUGUST, 1890.

IN CO-OPERATION WITH THE U. S. SIGNAL SERVICE.

Furnished by Corp. John Healy, Observer, Signal Service, in charge.

STATIONS.	ATMOSPHERIC PRESSURE.					TEMP. OF AIR.		Monthly Precipitation. Inch or more....	No. rainy days, 01 or more....	No. of cloudy days ....	No. of fair days.....	No. of clear days.....	No. of hail storms.....	No. of thunder storms..
	Mean reduced barometer...	EXTREME.			Monthly mean...	Monthly range..								
		Highest barometer.	Date .....	Lowest barometer.										
Crookston.....						64.7	61	1.81	8					
Duluth.....	30.09	30.32	17	29.67	2	60.7	41	3.02	18	8	14	9	1	5
Farmington.....						65.2	48	3.06	8	6	14	11	1	6
Grand Meadow.....						61.3	55	2.10	6	7	14	11	1	6
L. Winnebigoishish dam.....						60.4	38	2.88	11	9	15	7	1	3
Leech Lake dam.....						60.5	52	2.29	12	13	6	12	1	4
Mankato.....	30.06	30.36	17	29.69	7	64.8	48	2.84	5	10	13	8	1	3
Medford.....						63.7	57	2.82	13	5	13	13	1	3
Minneapolis.....														
Moorhead.....	29.97	30.34	22	29.59	1	62.7	57	3.69	11	12	6	13	1	3
Montevideo.....						64.7	56	1.64	7	2	17	12	1	4
Morris.....	29.98	30.33	17	29.60	2	64.2	60	2.32	8	2	17	12	1	4
Northfield.....	29.97	30.26	17	29.61	2	64.4	50	3.25	7	6	13	10	1	1
Pine River dam.....						61.0	42	2.80	10	13	10	8	1	1
Pokegama Falls.....						59.1	55	3.16	13	6	12	13	1	5
Red Wing.....	30.01	30.31	22	29.70	7	65.0	48	3.96	15	6	12	13	1	5
Rolling Green.....						65.7	49	2.49	9	10	5	16	1	3
St. Charles.....	30.01	30.31	22	29.64	7	61.1	46	3.60	8	8	12	11	1	5
St. Paul.....	30.01	30.33	22	29.64	7	65.0	49	2.20	12	8	12	11	1	5
St. Vincent.....	29.96	30.38	22	29.52	1	60.1	62	2.40	9	10	10	11	1	3
La Crosse, Wis.....	30.06	30.35	23	29.78	8	66.2	53	3.47	12	10	10	11	1	3
Mean.....	30.01	30.32	22	29.64	7	63.0	51.4	2.82	10.1	8.6	11.3	11.1	1	3

GENERAL REMARKS.—The month was cooler than usual in Minnesota; the deficiency in temperature being from  $2\frac{1}{2}$  to  $4\frac{1}{2}$  degrees in the various sections of the State. In the counties bordering on Lake Superior it was the coolest August in twenty years, or since the beginning of signal service records. Light frosts occurred in localities as given above, and the first killing frost of the season was reported from St. Vincent on the 22d.

The rainfall was slightly in excess in the central counties, comprising about one-third of the State. In the upper and lower portions there were deficiencies of about ten per cent. In the vicinity of St. Paul, however, the deficiencies equalled forty per cent.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF AUGUST, 1890, REPORTED UP TO SEPTEMBER 20. (Population 1889, estimated, cities over 2,000 inhabitants, 539,900; towns and villages, 1,047,860.)

*Total Number of Deaths*—932; 511 males; 421 females; 70% occurred in cities of more than 2,000 population. Ages, under 1 year, 44%; 1 to 5 years, 14.6%; 5 to 15 years, 5.79%; 15 to 30 years, 10%; 30 to 50 years, 11.48%; 50 to 70 years, 7.3%; over 70 years, 6.33%.

*Measles*.—4 deaths (3 males, 1 female), in 3 localities, 3 counties; 75% occurred in cities. Ages, 75% under 5 years. A continued decrease as compared with last month, and the same month last year.

*Scarlatina*.—8 deaths (4 males, 4 females), in 4 localities, 4 counties; 87% occurred in cities. Ages, 75% under 5 years. Mortality greater than last month, and for the corresponding month of 1889.

*Diphtheria*.—38 deaths (22 males, 16 females), in 13 localities, 13 counties; 50% occurred in cities. Ages, under 5 years, 30%; 5 to 10 years, 55%; 10 to 15 years, 5%; 15 to 20 years, 11%. Mortality less than last month, and the corresponding month of 1889.

*Croup*.—5 deaths (3 males, 2 females), in 5 localities, 5 counties; 60% occurred in cities. Ages, all under 5 years. A slight decrease over last month, and the same month last year.

*Typhoid Fever*.—43 deaths (31 males, 12 females), in 9 localities, 9 counties; 93% occurred in cities. Ages, between 5 and 15 years, 12%; 15 to 30 years, 46%; 30 to 50 years, 33%. A decided increase over last month, but less than the same month of 1889.

*Diarrhœal Diseases of Children*.—240 deaths (126 males, 114 females), in 51 localities, 41 counties; 82 per cent occurred in cities. Ages, under 1 year, 78%; between 1 and 2 years, 16%; 2 and 4 years, 5%. Mortality less than last month, and the corresponding month of 1889.

*Bronchitis*.—11 deaths (7 males; 4 females), in 5 localities, 5 counties; 82% occurred in cities. Ages, 73% under 5 years; between 60 and 70 years, 20%. An increase in mortality over last month, but less than the same month last year.

*Pneumonia*.—16 deaths (9 males, 7 females), in 10 localities, 10 counties; 69% occurred in cities. Ages, 81% under 5 years. A slight increase in mortality over last month, but much less than for the same month of last year.

THE origin of vaccine is a lively question in England to-day and is, very likely, to be discussed in this country. Whether so or not, the attention of Health Officers and medical men is called to the article reprinted from *The Veterinary Journal*, the leading paper of its class in Great Britain. That it is directly opposed to current medical opinion does not diminish its interest.

THE ETIOLOGY OF DIPHTHERIA.—Our readers will find the remarkable article which we translate from the last number of the *Annales de l'Institut Pasteur*, of absorbing interest. Compare it with the paper which we published, from advance sheets, last June, by Prof. Klein. The two papers mark a most notable extension of knowledge, with *practical results*, of this scourge of little ones. Under "Book Notes," will be found a review of current English sanitary opinion, on the same subject, as represented by an executive Health Officer and a Government Sanitary Inspector. A careful reading of these papers will put one fairly abreast the best work of the kind abroad.

DISINFECTION BY SULPHUROUS ACID GAS. Those of us who have, over and over again, put our trust in this disinfectant, under the most trying circumstances of actual need, and never found occasion to doubt its reliability, can afford to be amused at the frantic controversy, now in progress, about it.

The writer has always used the moist gas, and an excess of sulphur, more than, with a liberal allowance of coals or alcohol, would burn. Of course when the oxygen of the room-air is exhausted, no more gas is produced, for the burning stops. We do not ask so much of this gas as we used to do before we knew how much boiling water can do, and we use fewer feather-beds, stuffy quilts and the like. Ventilation, light, cleanliness, disinfection of dejecta, sputa, and clothing, immediately on removal, are the rule now as they were once the exception. The bad smell of the gas is not its strong point as a disinfectant, contrary to the popular idea. It must not be forgotten that this gas, if dry is an *aerial* disinfectant, differing in this respect from such (chloride of lime, for example,) as are used in solution. When used *moist*, as we prefer, it combines the properties of an aerial, and "in solution," disinfectant. And, above all, it must never be forgotten that all these artificial disinfectants are artificial, substitutes for the more efficient natural agencies for whose more tedious operation we have not time. Therefore be careful about pinning one's faith to any one or all of this series, nor forget that a liberal use of cleanliness, pure air, boiling water, and proper selection of furniture, bedding, clothing, with careful oversight of intercourse with the patient, will make such disinfection as sulphurous acid gas effects, the easiest labor of all. H.

### CONTRIBUTION TO THE STUDY OF DIPHTHERIA.

THIRD PAPER—BY MM. E. ROUX AND A. YERSIN.

Translated from *Annales de l'Institut Pasteur*, July, 1890, by C. N. H.

DIPHTHERIA is characterized by the bacillus described by MM. Loeffler and Klebs; to make an accurate diagnosis of this disease it is sufficient to find the bacillus. This is easy to do by microscopic examination, and cultivation upon serum, by the method of M. Loeffler. These means of diagnosis which put under our eyes, and in our hands, the very cause of the disease are above all, precious in cases where the diagnosis is difficult, even for experienced physicians. We have used them in more than a hundred cases of diphtheria, and we believe that, alone, they permit a scientific diagnosis. So we begin this paper with a description of the method which is best adapted to discover the bacillus in the false membranes.

#### I.

#### DIAGNOSIS OF DIPHTHERIA.

When one finds himself in the presence of a sore throat, with false membranes, he ought to remove a piece of them, with a tampon of absorbent cotton, held in a forceps, or on a stout stick. This fragment, dried a little on blotting



paper, is rubbed on cover-glasses so that the portion which touches the glass shall have come from the false membrane, and not from the buccal mucus. These cover-glasses, dried and passed through the flame, are stained, some with the blue of Loeffler, others with the violet of gentian, by the method of Gram. The preparation, washed in water, is examined, wet, with a homogeneous immersion lense. Among other microbes the bacilli of diphtheria, often grouped in masses, appear under the form of little rods, with ends a little thin, and rounded, slightly curved, swollen in pear, or club shape, and unequally colored. By the method of Gram, they color very intensely. They are never missing in diphtheria, and with a little practice, one distinguishes them readily from all other bacilli. In certain very severe cases we have found them almost a pure culture; but ordinarily they are mixed with many other microbes, though in examining the preparations, one finds little bundles of the characteristic bacilli. In general the pseudo-membranes of the mouth contain a much greater number than those of the trachea expelled at the moment of tracheotomy. The offensive false membranes contain, together with the specific bacilli, a great variety of microscopic organizations; it is these last which give them their offensive odor, and makes them friable. In the midst of the enormous mass of microbes which these membranes so altered, leave on the cover-glasses, it is sometimes difficult to distinguish the microbe of diphtheria. One can get round this difficulty by hardening the membranes in alcohol, making sections and staining them by Gram's method and eosine. Behind the superficial layer, rich in common microbes, one finds, imprisoned in the fibrin, little masses, very distinct, of the specific bacilli. This examination is very rapid; it requires but a few minutes, and in the great majority of cases, it gives results perfectly accurate. It may be used for dried membranes, and we have been able, many times, to detect diphtheria in membranes dried rapidly on linen or on blotting paper, and which have been sent to us by "confreres" far away. The physician, who has the care of diphtheritic patients, may get much useful information from the systematic, daily examination, of false membranes with the microscope. When the disease is progressing towards a cure, the specific bacilli become less numerous, while the microbes of impurity increase in the pseudo-membranes, which are more slight, less elastic, and more friable. Sometimes, even at the outset of diphtheria, one may predict a favorable issue, if he finds very few specific bacilli and very many of the others. Prognosis founded on microscopic examination has been verified many times in the service of Dr. John Simon, at the hospital for sick children. If one wishes to make an absolutely sure diagnosis of diphtheria, he must isolate the specific bacillus, and in a pure culture. This problem which, at first sight seems difficult, may be solved very quickly by cultivation of the false membranes upon serum by the method of Loeffler. On this subject we can only repeat what we have already said, in our memoir of 1888: (see Vol. V., No. 6, p. 61, (Aug. 1889) of this journal, for a brief of that paper.) Serum is a medium so favorable to the growth of the diphtheritic bacillus, that it produces very distinct colonies in less than twenty-four hours, although the greater part of the microbes of impurity have hardly begun to grow. It is sufficient, in fact, to scratch gently, a false membrane with a platina spatula, then to pass that over the surface of the serum, in a tube, and without recharging the spatula, to charge two or three

tubes more. This spatula, which is made of a large platinum wire flattened at one end, may be used to make cultures, directly from the false membrane on the mucous surfaces, rubbing it gently with the flattened end, and then spreading upon the serum, in one or more tubes, the little matter so collected. The tubes, so charged, are put in a proper stove at 35° C., and generally, after twenty hours, the diphtheritic colonies appear very clearly. They are round specks, greyish white, of which the centre is more opaque than the periphery. They remain small in the tubes first seeded, because they are very crowded, while they spread and grow in the tubes which were seeded last, and assume, in forty-eight hours, an appearance altogether characteristic. When one seeds, for comparison, tubes of serum, with a false membrane of diphtheria, and with the coating from the mucous surface of cases of non-specific sore throat, the appearance of the tubes is altogether different, after a stay in the stove of twenty hours. Upon those seeded with true diphtheria one sees a great number of colonies almost all alike, while upon the others there is scarce any distinct growth. It is rare, that in case of diphtheria, the development of the organisms of impurity prevents the recognition of the specific bacillus. One ought not to confine himself to the appearance of the colonies, he should make preparations upon cover-glasses and examine them with the microscope, after coloration. Sometimes, in fact, there are in the tubes of serum, colonies very much like those of diphtheria, and which are formed by a coccus. This coccus grows very well upon serum; after twenty hours its colonies are as large as those of the diphtheria, but after being in the stove forty-eight hours they are smaller than those of diphtheria of the same age. Furthermore they take, as they get older, a yellow tint which makes mistake impossible. We have found colonies of another coccus which resemble those of diphtheria, they remain greyish as they get older but their growth was slower than that of the specific microbe. Culture on serum succeeds very well with the dried false-membranes; it is enough to let them soften in a little pure water and then to proceed as with fresh specimens. Dried bacilli, in fact, retain life for a very long time; in this state they are able to resist a temperature of 95°-98° C. (204-209 F.), for one hour. When one has to do with false membranes heavily charged with other microbes, which makes the isolation of the specific microbe difficult, good results can, sometimes, be obtained by drying them, then heating them, before cultivating them, in the stove of Gay-Lussac for a half hour. Very many microbes are killed of other sorts, but those of diphtheria resist, as do the streptococci.

When one finds, with the microscope, that a colony consists of the specific bacillus, he should prepare pure cultures for experiment on animals. The colonies obtained directly by seeding from false membranes almost always contain some foreign germs; it is necessary to get rid of them. This is easily done by taking from one of them, with a platinum wire, or glass probe, a little of the culture, which is diluted in 10 c. c. of pure bouillon, contained in a test-tube; it is shaken thoroughly, so as to mix the bacilli with the liquid, and, with the platinum spatula a little of the dilution is taken to be spread on the surface of the serum. After twenty-four hours, in the stove, the colonies are very evident; they may serve for inoculation and new cultures. Thanks to the employment of serum it is easy, in forty-eight hours, to prepare cultures, directly from the false membranes and so to clear up all doubt as to the character of

the disease. Nutritive gelatine does not offer the same advantages as serum; the specific bacillus grows very well on this medium, but most of the microbes which accompany it grow, at least, as rapidly, and very soon, invade the whole surface. M. Klein has insisted, lately, upon the use of gelatine, for the isolation of the bacillus of diphtheria; the slowness with which this microbe grows upon this medium ought to cause its absolute rejection in practice. To recognize diphtheria the culture on serum is better than the microscopic examination. In very many cases where it is difficult to find the bacilli with the microscope, culture has given, in twenty-four hours, a great number of colonies.

To test for ourselves the value of these methods, we have chosen to transfer them to a hospital, and have devoted ourselves, for a certain number of days to the examination of a portion of the children who enter the diphtheria ward of the hospital for sick children; we took the subjects at hazard, paying no attention to the clinical signs which they exhibited, but limited ourselves to the microscopic and bacteriological processes as the basis of the diagnosis. Often, in fact, false membranes are sent, taken from children whom we have never seen. It is not till the diagnosis has been founded upon the presence or absence of the bacilli that we proceed to the detailed examination of the sick and learn the observations made in the service. Each day, for two hours, we make the microscopic examinations, and prepare cultures of the products from the new cases and generally we are able to give a positive diagnosis the next day at noon. From the 11th of April to the 22d of May, we have examined eighty infants sent to the diphtheria ward. In sixty-one of these we found the bacillus of the disease; among them thirty are dead, and thirty-one have recovered, after being sick for a longer or shorter time. The fatal cases included sixteen anginose; eight anginose with croup, and six croup alone. Nine times false membranes have been sent to us, and microscopic examination has enabled us to make a diagnosis immediately, verified the next day, by culture. Very many of the croups began without angina, and to make a seeding one limits himself to gently scraping, with the spatula, the mucous membrane of the tonsils and pharynx. Despite the absence of false membranes in the throat, the tubes of serum showed the specific colonies and the diagnosis of diphtheretic croup was so demonstrated. Were the nine infants who did not have the specific bacilli in the mouth diphtheritic? We did not hesitate to say no; and the march of the disease has confirmed our opinion. All recovered, and their general condition was very different from that of the children who had the bacillus. Some had very few false membranes, non-adherent, and not reproduced of a sort that one would consider as very doubtful diphtheria. Others, on the contrary, had upon the tonsils, and the uvula, false membranes, adherent and reforming, very rapidly, despite anti-septic washes, and the diagnosis of anginose diphtheria did not seem doubtful to any one familiar with the service. As repeated cultures did not produce the specific colonies, we declared that the children did not have the diphtheria. (They give details of three cases of this kind which I omit.—H.) These three cases were thought to be diphtheria, and the opinion would have been sustained, if the microscopic examination and culture on serum, had not corrected the diagnosis.

(Concluded in next number.)



**V**ARIOLA IN ANIMALS AND MAN.—Our readers will find the following abstract of a leading article by Geo. Fleming, CB. LL.D. F. R. C. V. S., and a recognized veterinary authority in England, of great interest, as bearing upon the question of the possible origin of vaccine virus. It is taken from Dr. Fleming's *Veterinary Journal* for August, 1890.

Referring more particularly to human small-pox, cow-pox, and horse-pox, he writes: "It may be mentioned, incidentally, that the two latter are, clinically, very different from the first named disease, and that if we desire to study a form of variola of animals, which most closely resembles small-pox of man, we can only find it in the sheep. In this ovine scourge we observe a similarity, almost approaching identity, which is very striking; in its extreme infectiousness, the great mortality it causes, the high fever and generalized eruption—as well as the character of the eruption—the symptoms and lesions which mark its course, the complications so frequently arising, as well its being often present as a wide-spread epizooty—all this approximates sheep-pox in the closest possible manner with small-pox. But the diseases are not due to the same germ or virus, for sheep-pox prevails in a manner continuously, in countries where small-pox is extremely rare, as in East Prussia, and in countries where the latter is prevalent, sometimes as an epidemic, as in England, sheep-pox is unknown.

When vaccination as a protection against small-pox (in man) began to gain ground at the commencement of this century, many of the leading veterinary surgeons on the continent tried it against sheep-pox, but they soon found that vaccinated sheep were afterwards as ready to take sheep-pox as before. A further proof is the fact that in New Zealand, Australia, South Africa and America, sheep-pox has never been seen, because not imported; yet the human variola, imported from Europe, is perhaps as prevalent as with us. The variola of goats, frequent in Norway, not communicable to cattle or sheep, appears where cow-pox, sheep-pox and small-pox are never seen. Horse-pox possesses more interest for us than sheep-pox, inasmuch as it is not rare in this country, and is transmissible to man and the cow, accidentally and experimentally, and in them, can hardly be distinguished from cow-pox. Long before the days of Jenner, an inflammatory or eruptive malady of the heel of horses was supposed to infect men and cows, and was named, from the cutaneous discharge which was its chief feature, "grease." But Jenner confirmed the popular notion, and was decidedly of the opinion that the "sore heels" or "grease" of horses, which infected the farriers who shod, and the grooms who attended such horses, was horse-pox and could produce cow-pox. This opinion was confirmed by Dr. Loy, of Pickering, who, in a little pamphlet which is now extremely rare, states that his earlier experiments to prove this relationship, failed, because, I presume, he was not aware that there is another disease of the heels and lower parts of the horses limbs—the real "grease"—which somewhat resembles horse-pox; but at last he had the good fortune to find a horse on whose heels the matter was much more limpid than the others he had tried—this was the fourteenth day of the disease; the seventh of the discharge from the heels. Four cows inoculated with this matter showed the usual symptoms of cow-pox, and a child also inoculated with it on the arm, had, on third day a papule slightly inflamed; fourth day, papule very elevated; fifth day, purple tinted



vesicle; sixth and seventh days, vesicle larger and darker. At same time fever, headache, quickened respiration, frequent pulse, white tongue, which symptoms declined towards ninth day. Sixteenth day after inoculation from horse, the child was inoculated with small-pox matter without result. A butcher applying dressings to the heels of a horse having grease, was inoculated. To test the question, Loy inoculated his brother from the pustules on the forehead and hands of the butcher. The brother never had small-pox.

(Concluded in next number.)

VITAL STATISTICS.

THE MORTALITY AND DISTRIBUTION of the most persistent, and fatal of the diseases affecting our population, is a very needful, and interesting study for those who have to devise, and use, the measures that Boards of Health are taking to control, prevent, or diminish them. And just in proportion as one appreciates their value, is it a trial of patience, as of faith, to wait while the slow years, and months, go on, and to check off the record they make on chart or table, item by item. This has been one of our duties since the collection of the statistics of births, deaths, and infectious diseases, was made the work of the Secretary, March 8, 1887.

If the reader will bear this fact in mind and that, because of it, and the change from yearly to monthly reports, the returns for the first quarter of 1887 are not as full as for the following months, the table (appendix, p. 48) will be found of value.

Take e. g. diphtheria, for the first six months of four consecutive years, 1887-88-89-90.

Here is another table showing mortality, from diphtheria, for the year 1888-89-90, by months:

Months	1888			1889			1890		
	Total	M	F	Total	M	F	Total	M	F
January.....	117	61	56	80	35	45	64	30	34
February.....	73	32	41	75	36	39	51	27	24
March.....	55	29	26	86	48	38	41	20	21
April.....	64	34	30	81	35	46	38	22	16
May.....	47	25	32	80	38	42	42	18	24
June.....	44	17	27	64	33	31	31	17	14
July.....	52	25	21	31	15	16	39	23	16
August.....	59	36	23	41	20	21			
September.....	69	33	36	41	22	19			
October.....	100	46	54	117	63	54			
November.....	93	51	42	117	56	55			
December.....	93	40	53	82	40	42			
Totals.....	866	429	437	889	441				
Per cent.....		48.6	51.4		49.6	50.4			

The distribution for the same years was as follows, ("Localities" are cities, villages, or townships, in which deaths from this cause occurred):

Year	First Quarter—Invasions		Second Quarter—Invasions	
	Localities	Counties	Localities	Counties
1888.....	40	27	25	19
1889.....	31	21	27	22
1890.....	25	19	17	16

The greatest mortality has been, for years, in the first and last quarters of the year; 50.9 per cent of the dead are females, 49.1 per cent males. (See English experience, under "Book Notes.")

**NOMENCLATURE OF DISEASE—CORRECTION OF THE RETURNS.**—It is proper to publish the very encouraging facts which the following table exhibits. In not a single instance has a discourteous reply been returned. The method, and object, of the inquiry are to submit to the attending physician causes of death which are so imperfectly stated as to defy classification; are evident mistakes, or where better definition would assist more accurate classification.

Month	No. Letters Asking Death Cause		No. of Replies	
	To M.D.'s	To Tp. Clerks	From M. D's	From Clerks
January .....	101	77	94	66
February ....	0	0	9	0
March.....	53	26	41	18
April.....	70	41	62	33
May.....	60	18	15	15
June.....	25	19	23	26
July.....	53	21	47	19
	98	6	80	1
Totals.....	416	208	362	168

Eighty-seven per cent of the physicians answered the inquiry, and over two hundred corrections were made in the causes of death.

Eighty per cent of the township clerks replied.

Six hundred and twenty-four letters inquiring as to death-cause, enclosing addressed postal card for reply, were sent out during the nine months ending August 31, 1890.

## BOOK NOTES.

THE ETIOLOGY OF DIPHTHERIA. A paper read at the meeting of the Congress of the Sanitary Institute of Great Britain, held at Brighton, England, on August 20, 1890. By W. N. THURSFIELD, M. D., Medical Officer of Health for the County of Shropshire. (Proof-sheets from author.)

THE ETIOLOGY OF DIPHTHERIA. SOME OBSERVATIONS ON. By H. FRANKLIN PARSONS, M. D., Medical Inspector, Local Government Board, England. (Date of paper, June 11, 1884. Transactions Epidemiological Society of London. Vol. III., N. S.)

The receipt, and reading, of Dr. Thursfield's paper, suggested a re-examination of some other English reports, on diphtheria, which happened to lie on our table at the same time, and affords a good opportunity for the introduction of the recent experience of our English co-workers to Minnesota Health Officers, and others interested in the matters of Public Health.

Medical skepticism as to the prevalence, marked infectiousness, and serious mortality, of diphtheria is rapidly getting less in England, and those who have failed to keep step with the advance are likely to experience a sharp awakening in the near future. We have to thank the aggressive sanitary workers for this gain, and for the progress already made, in creating a popular opinion there, which, there as here, is the support of the Health Officer, and the necessary "motor stimulant" to a considerable class of medical men. For our present purpose Dr. Thursfield may be taken to represent the best type of Local Health Officer, and Dr. Parsons is a recognized example of the class of medical inspectors, which owes its increasing value and efficiency, largely, to the genius, and tact, of Dr. Buchanan, the medical officer of the Local Government Board. We will test the value of the papers of these gentlemen by the help they give us in solving the difficulties we are meeting in our every-day dealings with diphtheria. This is our justification for occupying space here, and it is a fair and practical test. Dr. Thursfield begins his paper, as a student should, by a reference to recorded facts for a series of years, showing, by the Registrar General's returns, that in 1870 diphtheria caused 2,699 deaths in England, and that the mortality, from this cause, has steadily risen for twenty years, with a record of 5,455 deaths in 1889, more than double that of 1870. Making full allowance for the transfer of "eroup" to diphtheria, and for other changes in disease nomenclature, it is very clearly proven that diphtheria is on the increase in England. I was repeatedly assured of the same fact, by prominent English practitioners, last winter. Why? Dr. Thursfield suggests "that the history of this disease, in past ages, favors the view that it is liable to recur in cyclical periods, at one time of epidemic activity, at another of quietude and latency, and a possible, partial, explanation of the marked increase of diphtheria of late years, may be that we are on the slow flood-tide of a cycle of epidemic prevalence of the disease." This is a venerable theory, not unlikely, true of diseases which rarely recur in the same individual, to which class diphtheria, unfortunately, does not belong. Dr. Thursfield contrasts the mortality of typhoid fever with that of diphtheria for nineteen years (1870-1888) showing that it has decreased, with considerable regularity, from 8,731 deaths in 1870, to 4,848 in 1888, but 376 more than one-half the mortality of 1870.

Typhoid fever is the disease, almost universally selected by English Health Officers as the test of the value of any given sanitary method for the diminution, or removal, of filth, very much as the bacteriologists select "bacillus anthracis" to test the value of disinfectants. No one can doubt that sanitary measures have had, directly, to do with the diminished mortality of typhoid fever in England, nor is there any doubt that diphtheria has been classed in the same list, as a "filth" disease, and its cause looked for, with that of typhoid fever, in decay, and putrescence. But the above, and similar, statistics, indicate very plainly, that filth and decay, secondary causes—to use the old terms—both of typhoid fever and of diphtheria, are much nearer the primary cause of the first than of the second, and, for the very simple reason, among others, that the specific cause of typhoid fever, in man, goes, naturally to the soil, and surface waters, in considerable amounts, and directly to streams, in sewers. It is not so likely to get onto the person, clothing, food, etc., of other people, and so have as wide and effective distribution as has the specific virus of diphtheria. American experience confirms Dr. Thursfield's position, "that the two diseases have been treated as similar, in origin and spread. Consequently an exaggerated connection has been assumed between diphtheria and what are, ordinarily, known as "filth" nuisances, and as regards its spread, far too little attention has been paid to the overwhelming influence of personal infection." It will interest Health Officers who helped the change in professional, and popular opinion, as to the infectiousness of diphtheria in Minnesota, ten or more years ago, to note that almost the same method is being used in England now. Health Officers there, confronted as we were, by the increasing distribution and mortality of the disease, are compelled to know, sooner than their brethren, who study it for cure alone, that it is very infectious; that its virus is more resistant to natural, and artificial disinfectants, than that of other current diseases; that it is particularly liable to preservation, and transportation in infected clothing; that a mild case may transmit the most virulent virus; that croup is so often diphtheria in disguise, that it is always to be suspected; that mild cases may escape detection; and that the virus seems to gain, in infectiousness and fatality, from insanitary surroundings, particularly when overcrowding and filth are conjoined (producing what was once called "civic miasm.")

In 1878, Dr. Thursfield claimed diphtheria to be "essentially a disease of rural districts, and as intimately connected with structural dampness of habitation, as typhoid fever was with sewer gas." His statistics show that diphtheria has, of later years, exhibited a considerable tendency to settle in the large towns, and this tendency increasing, so that at present the stress of the disease falls upon them, notably London." He believes diphtheria to be indigenous to country districts, in even a stricter sense than typhoid fever is indigenous in towns, and just as that fever imported into the county, occasionally meets with a favorable nidus, and becomes endemic for some years,—so it is probable that diphtheria is becoming endemic in towns, because it there meets with conditions favorable to its existence outside the body, and to its spread."

Dr. Thursfield proceeds to give his general conclusions, based on nearly 2,000 cases officially investigated by himself, in seven different counties in Eng-



land, during seventeen years of time. I quote them, so far as possible, in his own words but without the facts and arguments on which he founds them: "In the majority of cases, diphtheria is traceable, clearly or inferentially, to direct infection. Structural dampness of habitation is the condition most favorable to the incidence, the severity, and the spread of diphtheria, and to the persistent vitality of the germ of the disease. That the germ can exist and remain potentially active outside the human body, I have no doubt, but that it has any connection with the gross forms of mould and fungi, other than coincidence, I do not think for an instant. I have not been able to establish any connection between diphtheria and contaminated water. The statistics show that the first and fourth quarters of the year have the greatest mortality. The only two animals which have, so far, been proved, under ordinary conditions, to have communicated the disease to man, or *vice versa*, are cats and cows. I have seen instances of both of these." One of the cats referred to was used by Prof. Klein in the experiments described in his communication to the Royal Society, (which was printed in this journal from advance sheets in June of this year.)

Dr. Parsons' paper sets out with a few interesting statistical facts worth remembering. Diphtheria was extensively prevalent in England in the middle of the last century; but during the latter part of that century, and the first half of the present, although epidemic in France and other continental countries, it appears to have been met with, in England, only in the form of sporadic cases, and occasional limited outbreaks. It was at first grouped with scarlet fever in the Registrar General's returns, so that it can be traced alone, only as far back as 1855. Measured by registered mortality, diphtheria rose rapidly to its climax in 1859 (53 in 100,000 population), and then declined, rising again in 1863 (33 in 100,000), then steadily subsiding until it reached 12 in 100,000 living, remaining at that point, with comparatively trifling fluctuations ever since." Dr. Parsons' paper was written in June, 1884. He adds: "In recent years it has shown a tendency to rise." That year it was 18.8, and in 1889, 22.5 in 100,000. Dr. Parsons avoids, as not within the scope of his paper, an opinion as to whether croup should be considered a distinct disease, or cases so classified be distributed between catarrhal laryngitis, and laryngeal diphtheria. His notes of the dates of the outbreak of the disease in 327 households, locate 83 in the first quarter of the year; 84 in the second; 54 in the third, and 106 in the fourth. Minimum in September, 11 (when country schools are closed for harvest holidays); maximum in November, 44, and December, 46. He finds the mortality comparatively small during the first year of life, increasing rapidly to more than double in second year, attaining its maximum at the fourth. It is high from the second to the fifth year when it rapidly declines.

Compare with our experience, taking the average of three years (1887-88-89). Mortality was, by age, 5% under 1 year; 8.2% from 1 to 2 years; 10.4% 2 to 3 years; 11.3% 3 to 4 years; 10.6% 4 to 5 years; 45.46% 1 to 5 years; 34.09% 5 to 10 years; 12.53% 10 to 15 years; 4.9% 15 to 20 years; 2.28% 20 to 30 years. The minimum mortality was in July, 114, and the maximum in October, 317. By quarters, the mortality was: First quarter, 421; second quarter, 507; third quarter, 473; fourth quarter, 942. Our mortality by sex

was, in males, 49.1%; in females, 50.9%. Dr. Parsons notes that, by statistics of 1872-1883, diphtheria was a disease of rural districts, as scarlatina was of towns. As to cause he finds "that infection from a previous case, is that of which the efficacy is indubitably established." He adds, and the remark will apply here as there, "yet I am not sure that the infectious nature of the disease is always so well recognized, even in the medical profession, as in my humble opinion it ought to be, and this for two reasons, viz.: first, that the disease often appears to originate *de novo*, no connection with a previous case being traceable; and second, because the degree of susceptibility to the disease varies greatly in different persons and different families, apart from the influence of age, and sex previously noted. So that the introduction of a case of diphtheria into a household, even under conditions apparently favorably to its propagation is not always followed by a spread of the disease. The attendance of children at school is a common means of propagating it." He notes, what has occurred to us, as it did to him, from experience, "that some cases seem to show that the infectious condition of the patient, in this disease, commences early, and may continue after apparent recovery, and that the infection of diphtheria attaches itself to houses and rooms with such tenacity as to resist ordinary processes of disinfection, unless applied with more than ordinary care and thoroughness; it may attach itself to, and be conveyed by, persons living in an infected atmosphere, not themselves affected." All this we have learned as Dr. Parsons did, in the effort to control, or trace the specific poison. Carriage of infection by clothing, a common mode of transmission with us, he refers to as a likely presumption. He notes that of the outbreaks reported to the collective investigation committee of the British Medical Association, in three-fourths there was no known exposure to a previous case. He thinks this failure to trace infection to antecedent case more common than in scarlatina, or small pox, and asks: "If it may arise otherwise, how? Scarlatina and diphtheria often prevail together, concurring or closely following each other in the same individual, the latter following the first, and scarlatina has tended more to assume a diphtheritic character in houses where there were local insanitary conditions." He inclines, on the whole, to think "that diphtheria occupies a position similar to erysipelas and puerperal fever; diseases which, we know, may arise otherwise than by specific infection from a previous case, but which, when once called into existence, propagate themselves among susceptible persons, with great energy, and the contagium of which, like that of diphtheria, may attach itself with persistence, to places and persons. My own experience," he continues, "so far as it has gone, has not enabled me to attribute influence to any particular soil or situation. The death-rate from diphtheria in the healthiest rural districts is double that of the most unhealthy towns; it is notorious that it frequently breaks out in houses where no sanitary defect can be found. Nevertheless, I must own to an impression—I cannot call it a belief—that diphtheria may, under certain unknown conditions, be caused by the inhalation of foul effluvia from drains and decomposing organic filth. I cannot say, however, that I have met with, or found recorded, any instance in which this disease appeared to pick out the consumers of a particular water supply in the way that enteric fever is wont to do." Dr. Parsons concludes a very strong paper: "It seems probable,

from what we know of the behavior of diphtheria, that its cause will ultimately be found to be some low organism, which, while capable of passing its existence outside the human body, and perhaps habitually doing so, can nevertheless, under certain circumstances, acquire and transmit to its progeny a parasitic habit and toxic properties." A very carefully guarded prognostic made in 1884, and partially fulfilled in 1890. H.

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ENTERO-MALARIAL FEVER—ITS ASSOCIATION WITH THE PLASMODIUM MALARIE IN THE BLOOD, AND THE BACILLUS OF EBERTH IN THE SPLEEN OR INTESTINAL CANAL.—By Dr. J. J. Kinyoun, Assistant Surgeon M. H. S.—Abstracts sanitary reports Marine Hospital service, Vol. V., No. 15, 1890.—It is a pleasure to find the composite fevers of the middle Southern States (such as we treated during the rebellion,) called by their proper name, and not typho-malarial, as has been so much the fashion since the late Dr. Woodward of the army selected it. Dr. Kinyoun, in this article, suggests that almost all cases of malarial fever are contracted by means of drinking water. At the Marine Hospital, New York, several cases of the mixed infection of enteric and malarial fevers have been admitted, in which the origin of the enteric complication was difficult to account for. He had no difficulty, usually, in finding the plasmodium in blood from the finger tips, and failing that, found it in the blood of the spleen. In examining the feces for the bacillus of Erbeth failures outnumbered successes because of the enormous number of other bacteria present. He concludes: "First—Malarial and enteric fevers are not antagonistic; second—Differential diagnosis sometimes impossible; third—There exists a mixed form of infection which can be diagnosed by means of a bacteriological and microscopical examination." I had the pleasure of seeing Dr. Kinyoun make the diagnosis of ague by the microscopic examination of the blood of a sailor who came into the hospital while I was visiting the laboratory there, a few weeks ago; the ameboid animal parasites were easily found and recognized. This is the Hematozoaire of paludism of Laveran. (See translation of his paper, Vol. III, 1887, of this journal.) H.

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EXCERPTS FROM JOURNALS AND BOOKS.

INFLUENZA—PLASMODIUM OF—Prof. Klebs, a cautious, conservative German observer, has found bodies similar to the plasmodium malarie, in the heart's blood of a victim of influenza, and suggests that the well-known relapse of that disease may be associated with the development of the parasite.—*Centralbl. f. Bakter., VII., No. 5.*

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LEPROSY AND CONSUMPTION. Dr. Bell, the veteran editor of *The Sanitarian*, makes a fair, centre shot, in commenting on the action of the Board of Health, of New York City, as to the victims of these diseases. "A case of leprosy recently discovered in New York appears to have excited more vigorous action, by the Board of Health, than ten thousand times as many cases of consumption, which constantly obtain there. Yet tubercular consumption is, to say the least, equally contagious, no less uniformly fatal, and

quite as loathsome as leprosy. True, the Board of Health, a year ago, officially recognized the contagiousness of consumption and published certain rules which *ought to be observed* for the prevention of its spread, but with that act the Board's efforts seem to have ceased.

Consumptives are everywhere to be found now, as they were before the rules were published, in the highways and byways, freely expectorating round about; the straw, carpets and floors of the tramway cars, and the decks of ferry and excursion boats, are continuously besmeared with the *materies morbi* of consumptives, more or less endangering the lives of all passers by, without any evidence whatever of the least effort by the Board of Health to enforce its rules, or even to call them to mind before the public. And this in the face of last year's mortality, *5,179 deaths by consumption*—more than one-thirteenth of the total mortality from all causes. From leprosy there was not one death. Yet one unfortunate fellow is discovered to have in some way contracted this disease, and he is straightway isolated with the rigor of the Mosaic quarantine, from which the Board appears to have derived its justification. For leprosy, though admittedly contagious by actual contact with the exudation of abraded surfaces, bears no relation to the ordinary role of contagious diseases spread by the dissemination of disease germs, like those of the bacilli of consumption, cholera, small-pox, typhoid fever, etc.—but rather like that of syphilis, a case of which could quite as reasonably be relegated to North Brothers' Island (Quarantine Hospital), and there restricted till death, as is the leper in question."—*The Sanitarian*, August, 1890, p. 153.

**LUMPY JAW (ACTINOMYCOSIS) CONTAGIOUS.**—Experiments were recently concluded in Chicago which will be of great importance to the packing trade and to veterinarians, many of whom have hitherto held that actinomycosis, or lumpy jaw, was not a contagious disease, and that the meat of animals afflicted with it was not injurious.

Members of the live-stock boards of several States, superintended the killing of a number of cattle afflicted with lumpy jaw, and examined the bodies. The object was to ascertain to what extent the disease affected the entire system so as to make the meat of such cattle unfit for food. The result of examination that in about 90% of the cases investigated, the disease was observed to have affected the internal organs and the flesh.—*Orange Judd Farmer*, August 30, 1890.

**ASS-LYMPH FOR VACCINATION IN INDIA.**—The experiment has been successful in the Madras Presidency, and the fact is of scientific importance; but we incline to side with the Hindoos, who are reported to object to the source, and very likely the donkey would join in the protest. The *Veterinary Journal*, from which we get the item, gravely adds: "The natives are a most conservative people in their ideas, and firm to the last in adhering to customs handed down to them from their forefathers, and if any advancement is to be made in regard to vaccination, the Government should most certainly not allow donkeys to be used for the production of lymph when any number of calves is available."



# PUBLIC HEALTH

## IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

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### INFECTIOUS DISEASES REPORTED DURING THE MONTH OF SEPTEMBER, 1890.

#### DISEASES OF MEN.

Diphtheria.....	{	cases, 38
		deaths, 14
Scarlatina.....	{	cases, 7
		deaths, 2

#### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	11
Reported during the month.....	7
Killed.....	5
Released.....	1
Isolated.....	3

Remaining Oct. 1st, 1890, isolated or not accounted for..... 12

NOTE.—Most of these are cases exposed, and isolated for further observation.

## MINNESOTA WEATHER SERVICE—REPORT, SEPTEMBER, 1890.

IN CO-OPERATION WITH THE U. S. SIGNAL SERVICE.

Furnished by Corp. John Healy, Observer, Signal Service, in charge.

STATIONS.	ATMOSPHERIC PRESSURE.					TEMP. OF AIR.		Monthly Precipitation.	No. rainy days, .01 inch or more....	No. of cloudy days .....	No. of fair days.....	No. of clear days.....	No. of hail storms.....	No. of thunder storms..
	Mean reduced barometer...	EXTREME.				Monthly mean...	Monthly range...							
		Highest barometer.	Date .....	Lowest barometer.	Date .....									
Crookston.....						52.6	56	2.20	6					5
Duluth.....	30.04	30.53	27	29.56	6	55.1	46	2.39	12	10	7	13		3
Farmington.....						56.6	48	4.00	6	7	11	12	1	3
Grand Meadow.....						53.7	60	2.69	6					6
L. Winnebigoishish dam.....						52.9	47	4.74	8	8	9	13		6
Leech Lake dam.....						52.4	53	3.44	9	8	8	14	1	6
Mankato.....	30.09	30.64	27	29.58	6	55.2	51	2.20	5	10	3	12		3
Medford.....						55.3	63	1.70	7	4	10	16		
Minneapolis.....						56.0	50	3.35	7					
Moorhead.....	30.01	30.48	27	29.38	6	54.6	56	2.62	8	8	6	16		
Montevideo.....						59.1	53	1.61	5					7
Morris.....						56.7	56	1.06	5	3	11	16		2
Northfield.....						56.7	59	3.25	11	3	14	13		
Pine River dam.....						55.2	54	1.90	8	11	3	16		3
Pokegama Falls.....						50.5	57	3.01	7					
Red Wing.....	30.06	30.52	28	29.55	6	58.4	53	3.15	10	4	10	16		5
Rolling Green.....						58.1	53	1.69	6	6	8	16		3
St. Charles.....						52.3	54	3.97	5					2
St. Paul.....	30.05	30.53	27	29.52	6	58.5	53	2.73	10	12	4	14		6
St. Vincent.....	30.02	30.44	27	29.49	6	51.8	53	3.32	11	9	16	5		
La Crosse, Wis.....	30.12	30.57	28	29.69	18	55.2	57	5.20	9	11	6	13		
Mean.....	30.05	30.52		29.52		55.1	53.8	2.82	7.8	7.4	8.9	13.7		

GENERAL REMARKS—The month was generally less than one degree cooler than usual. The precipitation was in excess 2.02 inches at St. Vincent and 0.52 at Moorhead, while at St. Paul and Duluth it was deficient 0.65, and 2.14 respectively.

## DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF SEPTEMBER, 1890, REPORTED UP TO OCTOBER 20.

*Total Number of Deaths*—802; 350 males, 297 females; 61% occurred in cities of more than 2,000 population. Ages, under 1 year, 37%; 1 to 5 years, 14%; 5 to 15 years, 6.5%; 15 to 30 years, 12%; 30 to 50 years, 12%; 50 to 70 years 10%; over 70 years, 8%.

*Measles*—1 death, male, in city; age, under 1 year.

*Scarlatina*—4 deaths (3 males, 1 female), in 4 localities, 4 counties; 75% occurred in cities. Ages, 75% under 2 years. Mortality less than last month and September, 1889.

*Diphtheria*—39 deaths (23 males, 16 females), in 14 localities, 14 counties; 51% occurred in cities. Ages, under 5 years, 40%; 5 to 10 years, 40%; 10 to 15 years, 20%; 15 to 20 years, 8%. A slight increase in mortality and distribution over last month but less than the corresponding month of 1889.

*Croup*—11 deaths (7 males, 4 females) in 7 localities, 7 counties; 72% occurred in cities. Ages, 63% under 5 years; 5 to 10 years, 37%. Mortality and distribution greater than last month but less than in September, 1889.

*Typhoid Fever*—35 deaths (23 males, 12 females), in 14 localities, 14 counties; 71% occurred in cities. Ages, between 5 and 15 years, 11%; 15 to 30 years,

66%; 30 to 50 years, 14%. Distribution greater, mortality less than last month. Much less than in September, 1889.

*Diarrhoeal Diseases of Children*—132 deaths (75 males, 57 females), in 64 localities, 47 counties; 54% occurred in cities. Ages, under 1 year, 77%; between 1 and 2 years, 20%. A decrease of nearly one-half since last month and less than September, 1889.

*Bronchitis*—10 deaths (5 males, 5 females), in 4 localities, 4 counties; 90% occurred in cities. Ages, 70% under 1 year; 30% between 60 and 70 years. A Much less than September, 1889.

*Pneumonia*—18 deaths (8 males, 10 females), in 8 localities, 8 counties; 77% occurred in cities. Ages, under 5 years, 50%; between 20 and 40 years 22%; between 40 and 60 years, 17%. A little greater than last month, but less than for the same month last year.

THE preliminary report of the Secretary to the State Board of Health will be found in this number, in part. Read it carefully and see how our common work is gaining in many directions, in some faster than in others, but in all it has moved forward, in the last year. We cannot be still, or satisfied till *nothing* is behind, but all our work up to date, and all contributing, in due proportion, to the general object, the lessening of the sickness, and death, rates, and the proportionate increase in the health, efficiency, and happiness of the whole population,

THE BETTER SANITARY CONTROL OF TYPHOID (ENTERIC) FEVER, is possible, if we are guided by the following facts, which may be assumed as proven.

1st. Enteric fever is infectious by the discharges of the sick—from the bowels certainly—and not unlikely by the urine. The specific poison can live some time in water, in dust, and in soil. It grows, under favorable conditions, in those things, and they, (*water particularly*), are carriers of the poison. That poison is a living plant of the lowest type. It is a matter of experiment that it grows best in a feebly alkaline medium; but that a strong alkali is speedily, and surely, fatal to it.

2d. The clothing, bedding, and other material of the kind, may be soiled by the discharges, as may the floor, walls or furniture. From all these, dried and infectious matter, may become dust, which in this way, is easily made a carrier of the poison. But the discharges themselves are the sources from which all the rest are infected, and so, in proportion to the promptness and thoroughness of their disinfection will be the proportion of all other danger.

3d. *Disinfection of the discharges* is best done in this way: Put into the vessel, before use, (keep in it all the time it is waiting for use, in the room of the patient, and under his bed,) a coffeecupful of the lime water described below. It will then be impossible to use the vessel without *instant disinfection, which is the essential thing*. After use, let the mixture stand, covered, half an hour, and then bury it, or *after adding another cup of the lime water*, and stirring the mixture, pour it into the water closet.

4th. *All soiled clothing, bedding, towels*, and the like, to be put immediately into as hot water as possible, and boiled for twenty minutes. That disinfects positively, and the things can then be treated as any other "wash,"

5th. Cloths used in bathing the sick, and the water used for each bathing, should be disinfected after use, by boiling the cloths in the water, and so both are disinfected.

6th. Do your dusting with a moist cloth, and sweep with moist saw-dust, tea leaves, or with a broom covered with a damp cloth. Put the cloths after use, in the hot water, and the dust in the stove.

7th. The same rules apply to the disinfecting of the room and furniture, after the disease has ended, as to them while in use, only now be more thorough, and, after cleaning, use also, abundant sunlight and pure air.

8th. The lime water, as every one knows, loses its strength by exposure to the air. That is the only drawback to this use of it, but it is easily overcome in this way: Take the best quick-lime in lumps, and pour on it, in a pail, or other suitable vessel, water, in the proportion of about one-third water to two-thirds lime, by weight. Cover closely and let it slack till it is in fine powder, or a creamy fluid. One part of this to three of water will give a saturated solution, and they should be mixed in the fruit-jar, or bottle, in which it is kept for use. A little kerosene or oil poured on the surface will exclude the air, which a common cork will not always do. It is always well to keep a quantity of this lime water on hand for disinfecting sinks, cess-pools and the like, when removing their contents.\* The bottles, or jars, should be plainly labeled "lime water," to prevent accident, and kept in



a cool, dark place. Chloride of lime, sold in pound packages in the shops, is more costly, less easy to get, and more odorous, but no better for the end in view, to *kill the poison of typhoid fever*.

9th. *Isolation for the control of enteric (typhoid) fever.* From what has gone before it is evident that isolation in the sense of the word as applied to scarlatina, diphtheria or small pox, is needless. If disinfection has been used constantly, as directed, the danger to others having the direct care of the sick is almost nothing, nor need others be excluded from the house.

10th. Now it will be evident why prompt notification of this fever must be insisted on, from physicians and householders. It is to enable Boards of Health to know where to guard against danger from this poison which is so dangerous in water that the discharges of a single patient, might start an epidemic and destroy many lives.

All will be glad to know that for the last three years this fever has steadily decreased in mortality. In 1887, 717 deaths; in 1888, 643 deaths; in 1889, 572 deaths, and in eight months of 1890, but 178 deaths. Here is evidence that the measures already taken have been of use, for we have kept up a constantly increasing fight by an increasing care of localities having more than isolated cases. There is still room for improvement, but in a way very easy and desirable, especially for those who have the care of the sick, and who, taking those precautions, are saving themselves, and every one else who might be exposed by the particular case.

It is the wish of the State Board of Health that Local Boards unite with us in enforcing notification of enteric fever and its sanitary control, in the way here suggested. C. N. H.

#### VITAL STATISTICS.

UPON the motion of the Secretary, the State Board of Health, at its last meeting, ordered the increase of the edition of PUBLIC HEALTH IN MINNESOTA to 3,700 copies so that one might be sent, free, to every clerk of a

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\* For bedroom use, take the clear solution; to disinfect walls, or ceilings, mix residue and clear solution into *white wash*, and apply with a brush or broom. Pour it into vaults and drains. Always prepare it *fresh* when dealing with typhoid fever.

Local Board of Health in the State. Two copies will then go to every township Board; one to the clerk to be kept in the files of his office, the other, as at present, to the chairman, for the reading of himself and his associates. A portion of each issue will be devoted to notes on the current work of collecting the returns of births and deaths. In the next number will be found matter of direct interest to clerks, under this heading.

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#### HEALTH OF CHILDREN IN THE PUBLIC SCHOOLS.

WE are now ready to begin a regular department in PUBLIC HEALTH, devoted to this subject. Sections 25 and 26, chapter 132, laws of 1883, give the law as to vaccination, and infectious diseases in the schools.

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#### DR. GRONVOLD'S REPORT ON LEPROSY IN MINNESOTA, UP TO SEPTEMBER 1, 1890.

*To the Secretary of the State Board of Health of Minnesota.*

DEAR SIR:—In pursuance of instructions received through you, dated February 25, 1890, I have, by correspondence mainly, made investigations, throughout the State, concerning the number of lepers within its boundaries. Circulars have been distributed to persons, who, there was reason to believe, knew anything about the matter. About 140 clergymen, of different denominations have been addressed, and about 70 have sent answers. Members of the Minnesota State Medical Society, and other physicians, have been applied to, and about 50 have answered. I have also corresponded with other persons; town clerks, county supervisors, and others, to obtain information in special cases.

As a result of the inquiries (up to September, 1890,) sixteen cases of leprosy are now known to be in the State. The number of lepers is larger than previously reported, because some were overlooked in the previous investigations, as the disease appears in them in a very mild form, and they enjoy comparatively good health. Occasional pains and discomforts have been ascribed to rheumatism, and in some of them the disease seems, at present, to be at a standstill, especially in cases of the anaesthetic form. In other cases the symptoms of the disease have only lately been conspicuous.

As long as immigration goes on there will be found, occasionally, new cases, while the old ones die out. After the experience of the past forty years, there is little danger of the disease spreading. We have had lepers among us for the last fifty years, and not one case, of even probable contagion, has been discovered. The disease is dying out here. As to keeping out the disease, in the early stages by quarantine, it is as Dr. Hansen, of Bergen, Norway, says—impossible;—as not even an expert could, at that time, make out the diagnosis.

The following is a list of the cases now in Minnesota, with some of the details; the residence is given by counties.

No.	Sex	Residence	Age	In America	A Leper	Form of Disease	Present Condition
1	Male	Renville	74 yrs.	24 yrs.	17 yrs.	Anaesthetic	Very good
2	"	Rice	36 "	27 "	14 "	Tubercular	Getting worse
3	"	Otter Tail	60 "	16 "	30 "	Anaesthetic	Fairly good
4	"	Wilkin	50 "	19 "	32 "	"	Good
5	"	Dodge	42 "	19 "	23 "	"	Fairly good
6	"	Faribault	70 "	23 "	23 "	"	Getting old
7	"	Polk	56 "	26 "	? "	Tubercular	Getting worse
8	"	Yellow Med.	33 "	14 "	5 "	"	"
9	"	Chisago	52 "	9 "	10 "	"	"
10	Female	Polk	50 "	16 "	20 "	Anaesthetic	Doing work
11	Male	Renville	47 "	3 "	5 "	"	Atrophy of muscle
12	"	Hennepin	28 "	10 "	6 "	Tubercular	.....
13	"	Clay	40 "	22 "	? "	Anaesthetic	Good
14	Female	Fillmore	40 "	20 "	16 "	Tubercular	Very good
15	"	Goodhue	.. "	20 "	.. "	Anaesthetic	.....
16	Male	Mower	64 "	34 "	.. "	"	.....

The date assigned to the beginning of leprosy by its victims, is not always reliable, as will be shown further on. There are 10 cases of the anaesthetic form of the disease, and most of them are walking, tolerably well, and doing some work. All are between 40 and 74 years of age, 4 are over 60. One man of 60 years has had the disease for 30 years, and one 50 years old has had it for 32 years; the disease seems, in some of them, to have stopped. Six persons have the tubercular form of the disease, and are between 28 and 56 years old. The time they have had the disease is given, for three of them, between 5 and 10 years; one 10, one 14 years, and one woman, 40 years old, has had the disease at least 16 years, and is better now than since she got the disease. It should be remarked here, that lepers very seldom know, or care to know, the time when the disease manifests itself. The number set down under "A Leper" is, therefore, not to be relied on, without other evidence to support it. At least one case has had the chance to be exposed to contagion in this country, having had social intercourse with No. 2, and his deceased, leprous brothers. But on the other side he was exposed to contagion in the old country, before he came here. He is from a place in the old country where there are several lepers, a nest of leprosy, and it seems most reasonable to believe that he contracted the disease there. In view of the fact that children, born in this country, of leprous parents, though exposed in a high degree to contagion, have not, so far, after 50 years of experience, once had the disease, it seems probable that, in this case the disease was contracted in the old country. New houses, new furniture, and new other things, together with greater cleanliness, the result of greater economical prosperity in this country, seems inimical to, and a safeguard against, the transmission of the disease by contagion. If one is right in saying that he first had the disease (any symptoms of it,) nine years after he came here, it must be remembered that in some of our old cases, where there was no chance of contagion after they left the old country, the disease was first discovered, nine years or more, after they had come here.

As regards the sources of my information I have to state: The first six cases are old ones and known the Board before the last investigation began. No. 10 is an old case known to me since June 15, 1883. She

moved away and we lost sight of her until she was re-discovered by Dr. Nelson, of Fertile, by whom, and his partner, Dr. Kniekerboeker, No. 7 was reported. No. 8 by Dr. Knut Hoegh, 318 Nicollet Avenue, Minneapolis, and also by a clergyman. No. 9 was reported as suspicious by Consul Christenson, of Rush City, and seen by me March 26, 1890, and pronounced to be a case of tubercular leprosy. It was reported later by Dr. Denslow, of St. Paul. Nos. 11 and 13 were reported by a clergyman. No. 12 was reported by Dr. Van der Horck, Minneapolis. No. 14 by Dr. Magelson, Rushford. No. 15 by Dr. Hoegh, Minneapolis. No. 16, by W. W. Sweet, County Commissioner, Third District of Mower County, and the details were furnished by Drs. Knight and Alsdorff, Le Roy. I have also to acknowledge information and assistance from Dr. Cooley, of Madelia, and Dr. Stoddard, of Franklin, both of whom will probably give information as to cases of leprosy; from Dr. Bracken, Dr. Kilvington, and Dr. Roberts, of Minneapolis; Dr. Puffer, of Bird Island, and Dr. Jenner, of St. Paul, all of whom have given valuable information; also from 30 others who have kindly answered the circular, giving the information that no case of leprosy was known to them, in their part of the country.

Respectfully,

September 1, 1890.

CHR. GRONVOLD, M. D.

### CONTRIBUTION TO THE STUDY OF DIPHTHERIA.

THIRD PAPER—BY MM. E. ROUX AND A. YERSIN.

Translated from *Annales de l'Institut Pasteur*, July, 1890, by C. N. H.

(Concluded from the last number.)

ARE the cocci so abundant in the false membranes which they form, in place of pure cultures, the cause of these pseudo-membraneous sore throats? Do they belong to the same species in the three examples given? Can they produce false membranes on the mucous membranes of animals? We cannot say, not having had the time to study them. However that may be, these observations show, once more, that many microscopic organisms share with the bacillus of diphtheria, the ability to produce false membranes on mucous membranes. \* \* \* \* \* The history of these sore throats remains to be written when the microbes which cause them have been isolated and studied.

Physicians, familiar with diseases of children, may then declare children diphtheritic, and send them to the diphtheria ward, who have not the disease. It is needless to insist on the danger to a child with a sore throat of exposure to infection in such a place. \* \* \* \* \* The introduction into practice of the means we have suggested will materially diminish the number of these mistakes. (They then describe a ward for suspects where the children are to remain till the diagnosis is settled, before removal to the diphtheria ward.)

### II.

*Does the bacillus of diphtheria persist in the mouth after the disappearance of the membrane?*

From a person having diphtheria, we remove, every day, a piece of the false membrane, stain on cover-glass, and examine it with the microscope, So



long as the membranes are adherent and reproduce themselves easily, we see plenty of the specific bacillus; but they become rare in proportion as the disease gets towards cure, and as the membranous layer detaches itself. The change in the consistence of the false membranes coincides with the invasion of common microbes.

Culture on blood serum enables one to follow the disappearance of the bacilli. Frequently they last as long as the membranes and disappear with them. We can cite many instances in which the cultures made the next day after such disappearance, failed to give specific colonies. \* \* \* \* The rapid disappearance of the bacillus of diphtheria is not always the rule; it may be found in all its virulence in the mouth of person who recovered from the disease, and in whom the pseudo-membranes no longer exist and in whom the mucous membranes are perfectly healthy." (Details are given of one case in which the bacillus was found three days after recovery; another of three days; another of eleven days, and they go on to state, "The danger of contagion does not disappear with recovery. The convalescents from diphtheria ought not to return too soon to their place in the family, the workshop or the school. A place should be provided for convalescents from which they should not be discharged till after repeated cultures no more specific bacilli are found in their mouths. These are not imaginary dangers. All practitioners can cite epidemics of this disease starting from infants who had it some time before. It is therefore well to be warned that the germ of diphtheria may be preserved not only in the bedding, and clothing, but in the mouth. What is the extreme duration of this preservation on the mucous membrane? (They quote one of their cases fourteen days after recovery.) This persistence of the bacilli will be most likely met in cases not recognized, or badly cared for. \* \* \*

### III.

#### *Preservation of the virus of diphtheria outside the body.*

The bacilli of diphtheria remains alive a very long time in cultures; it is not rare to find colonies active, after more than six months, on serum, and at the temperature of the room. Such colonies dried and preserved at 33°C. (92 F.) were sterile after three months; at the common temperature of the room, after four months.

At a temperature of 45°C. (113 F.) they were sterile after four days. The experiments with false membranes are more interesting, because the dried debris of these membranes and of the spittle of diphtheria patients, when dried upon a rag, the rag folded in a paper and laid in a closet at a temperature of the room gave living bacilli, on culture after three, and five months. Such membranes, dried on a bed cover or a mattress, might, as dust, carry infection. Under the operation of sunlight, and moisture alternating with dryness the virus has been destroyed very rapidly. \* \* \* \* From all that we have seen, it is the articles of bedding or clothing shut up in a place where the air is not renewed, and away from sunlight and moisture, which are dangerous for the longest time. When moist the virus does not resist a temperature of 58°C. (137 F.) more than a few minutes. Boiling water is fatal to the virus wherever it can be used. But the dried virus bears a heat of 98°C. (209 F.) for more than an hour. The resistance of the dried virus to various causes of

destruction, explains the persistence of diphtheria in certain hospitals despite the special ward. For the disinfection of linen, clothing, bedding, steam under pressure is the best. (After a long section devoted to a study of the virulence of the diphtheritic bacillus in false membranes; another upon the pseudo-diphtheritic bacillus; another upon the attenuation of this virus, and another upon the return of virulence to the attenuated virus, they conclude their paper as follows:)

"The best way to stop the diffusion of diphtheria is to recognize it as soon as possible; therefore the precise diagnosis should be made by the microscopic examination of false membranes, and by cultures upon serum."

"The active virus remains a long time in the mouth after the disease is cured; therefore such patients ought not to be returned to ordinary life so long as they are the carriers of the bacillus. The virus of diphtheria retains its virulence a very long time when dry; therefore one ought to disinfect (with steam under pressure) linen and all things which have been in contact with the patient." The attenuated virus of diphtheria is very widely diffused, it can resume its virulence; therefore from the beginning of simple sore throats, and the sore throats of measles and scarlatina, practice antiseptic washing of the throat."

(THE END.)

### VARIOLA IN ANIMALS AND MAN.

(Concluded from the last number.)

THE fact that inoculation from the "constitutional grease" was a protection from small-pox, and that the rather severe effects of direct transmission from the horse to the human species were modified by passing through the cow, or through mankind, was fully recognized by this enlightened observer; as well as the other important fact that the matter was only certainly effective when perfectly limpid, which was in an early stage of the disease. Loy likewise remarked that neither the original nor the communicated disease was infectious through the atmosphere.

The opinion so strongly expressed by Jenner, based, as it was, on well observed facts, and the convincing demonstrations (clinical and experimental), of Dr. Loy, do not appear to have availed much in establishing the existence of such a malady as horse-pox. After a review of the history of these diseases down to Bouley's experiments at Alfort in 1863-64, Dr. Fleming continues: "So that since 1864, when the exact nature of horse-pox was forever settled by the observations and experiments of Bouley, no doubt has existed in the minds of those who have carefully studied the history of the disease that horse-pox and cow-pox are as like each other as possible, so far as the result of inoculation are concerned. But the two diseases appear to be perfectly independent of each other in their origin. Cow-pox appears where there is no horse-pox, or possible contact with horses, and where the men who attend upon these do not milk cows. Horse-pox, then, prevails entirely independent of small-pox or cow-pox. Human small-pox inoculations on the horse are either negative, or nearly so, the positive results yielding only the most trifling evidence of infection, and nothing at all like horse-pox being ever produced from the insertion of the small-pox virus into the skin of the horse, while the

re-transmission to mankind only gives rise to the small-pox. But horse-pox inoculated on the cow, produces what in every way corresponds to cow-pox, and on man to vaccinia. From the cow and man horse-pox can be transmitted indefinitely; and while its action is somewhat modified by repeated transmissions, its protective influence against variola is undiminished. This has been demonstrated times almost without number from the days of Jenner up to date." He quotes the case of horse-pox discovered in Paris in 1880, (I think by Dr. Prosper de Pietra Santa of *la Societe Francaise de l'Hygiene*. H.) used successfully on a heifer and continued to this date by that society.

Cow-pox is a much more common disease than is generally supposed, but like horse-pox, it causes so little constitutional disturbance that cow-owners think little of it, when it appears among their stock. It is readily transmissible, like horse-pox, to several species of animals but only by inoculation; and though presenting in the eruption at the seat of inoculation, modifications in the different species, it always proves its absolute identity when carried back to the bovine species again, and shows that it is not altered by such transplantation. As human small-pox most closely resembles sheep-pox, so does cow-pox resemble horse-pox. Human variola cannot be converted into cow-pox any more than sheep-pox can; though, for nearly a century, it has been stated by the highest medical authority that cow-pox is simply modified small-pox. Jenner himself seems to have thought that the two diseases were identical, and that they might have a common origin—people affected with small-pox infecting cows and producing cow-pox in them. Badcock, chemist of Brighton, reported that he frequently produced cow-pox from small-pox; Ceely, a surgeon of Aylesbury, made a similar statement, and Erasmus Wilson, Dr. Watson, and a host of medical men have expressly asserted that vaccine disease is only small-pox rendered mild by passing through the system of the cow. "The great object of inoculating the small-pox was to produce a benignant form of the disease by diminishing the number of pustules."—*Watson*.

After an elaborate historical review, Dr. Fleming concludes by quoting Dr. Klein's experiments in 1878 under the supervision of Dr. Seaton, Prof. Burton-Sanderson and Mr. Ceely himself. Sixteen heifers and fifteen milch cows were inoculated with small-pox matter, obtained from persons affected with the disease at various stages; but the results were entirely negative. Cow-pox could not be produced. He quotes with approval the carefully elaborated testimony of Chauvaux, published in 1877, which concludes with this notable paragraph: "From this study it is evident—and the evidence is farther fully confirmed by clinical facts—that the organism of the horse is the real source (*vraie patrie*) of natural vaccinia, conformably to the views of Jenner."

Dr. Fleming concludes this exhaustive review of the origin of vaccine from the standpoint of an educated and representative veterinary physician, by the following criticism of the position *taken at second hand* by the parties mentioned, that vaccine is syphilis. "Prof. Crookshank and Dr. Creighton, adopting more or less the views Dr. Auzias Turenne, are of the opinion that the cow-pox is analogous to human syphilis. I must confess, however, that so far as bovines are concerned, I see no analogy whatever; there is no disease of cattle at all allied to syphilis, so far as I am aware—for we cannot compare the



gonorrhoea which we sometimes see in them, and which is undoubtedly contagious with the very serious disease which produces such disastrous effects on mankind. If we assume, as we may well do now, that the horse-pox is most closely allied to, if not altogether with, cow-pox, the analogy of the later to syphilis is still farther removed; as horse-pox is a very benignant disease, marked by the most trifling constitutional disturbance, and having no second or tertiary sequale like the human scourge; though it is very contagious, and may be transmitted in the act of coition. It should be remembered that the horse has its own peculiar syphilis, marked by many of the salient features which characterize the venereal disease of mankind; but is very widely different, in every respect, from horse-pox."—*The Veterinary Journal*, August, 1890, p. 73.

NOTE—The following from the just printed report is worth reading in the connection: Dr. Cory, of the National Vaccine Institution, in London, testified before the Royal Commission on Vaccination recently, that he regarded vaccination as modified small pox (Second Report Commission, question 4,551) and in other answers. It is also the opinion of Dr. McCabe, of the Local Government Board of Ireland, (question 3,111) who also claims that "while it would be difficult to inoculate small pox upon a cow or calf, the lymph which could be obtained from such a source would be cow-pox, and not small-pox," (q. 3,110). H.

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### PRELIMINARY REPORT OF DR. HEWITT, SECRETARY, TO THE STATE BOARD OF HEALTH.

RED WING, Minn., October 18, 1890.

I BEG leave to submit an abstract of my report of the work of the Board, and of the Local Boards of Health, since January 1, 1888. As the duties of the Boards are continuous, it is not practicable to judge of the work of any given period, except by comparison with another. This paper relates particularly to the period for which we have to report to the Legislature, but I have used the facts of previous years when needed, in illustration.

It will be convenient to refer to the different departments of the work in order, and I begin with that of the Local Boards in which this Board co-operates.

*Organization of Local Boards of Health.*—It was not till 1885 that we obtained legislation to make the organization of these Boards obligatory, and upon a common plan, for cities and villages, with the succession of members so arranged that the organization should be continuous.

The Township Board of Supervisors is the Local Board of Health, but holds office only one year. The Attorney General and leading members of both Houses united with us, at the last session of the Legislature to try for such a change in the method of election that one member should retire and another be elected each year; but we failed. I respectfully advise another trial. The advantage would be a continuous organization, and always two members with a year's experience. The following table exhibits the progress of Local Board of Health organization from March, 1885, to date.



YEAR	CITY AND VILLAGE BOARDS			ACTING H. O. THE CHAIRMAN
	WITH PHYSICIAN AS H. O.		WITH ACTING H. O.	
	CITIES	VILLAGES	VILLAGES	TOWNSHIPS
1885	15	92	.....	180
1886	26	118	.....	407
1887	29	144	12	1040
1888	31	149	23	1271
1889	31	166	30	1292
1890	31	166	31	1303

There are in Minnesota 31 cities, 199 villages and boroughs, 1307 townships. Comparing this fact with the actual record of active Local Board of Health organizations October 1, 1890, it is evident that there are no cities, nor villages, without Boards of Health, and but four townships whose Board of Supervisors have not yet assumed the duties of Local Boards of Health in co-operation with this Board. That means, each Board has filed the name and post-office address of its Chairman and other members with your Secretary, and has received a file of the sanitary laws of the State, the instructions and circulars of this Board; a set of the blanks and forms in use for reports and certificates in the management of infectious diseases of men and animals; directions for the removal of nuisances, sources of filth, and causes of sickness, and for the control of offensive trades, and has assumed its duties under the law. It means, further, a direct communication with your office, and the prompt notification of infectious disease to your Secretary, and in return immediate notification by him to every Local Board of any sanitary danger threatening it, and the constant co-operation of the State Board in sanitary work. These relations between Local Boards and the State Board are not merely formal, but constitute an active mutual co-operation for the detection and control of preventable diseases, both of men and animals, for the purity and abundance of the water supply and for the removal of known causes of sickness.

A copy of PUBLIC HEALTH IN MINNESOTA, the monthly publication authorized by this Board, and containing the statistics of disease prevalence; the meteorological and mortality record for the same time; with answers to inquiries upon sanitary questions, and other sanitary information is sent regularly to every Board.

*But what have these Local Boards of Health done?* I can answer that best by a statement of what the law requires of them and by an abstract from our records of their work. The duties of Local Boards of Health are:

*In general*—"To have and exercise all the powers necessary for the preservation of the public health."

*In detail*—1st. *To make once a year, in May, and oftener, if necessary, a thorough sanitary inspection* of their town, borough or city, by their health officer, and to submit a copy of said report as soon as rendered to the State Board of Health. The files of PUBLIC HEALTH from the first numbers, show

the character of this work, which, while a good way from what it ought to be, owing, largely to the indifference of local authorities to their Boards of Health, except in the presence of epidemics, is a growing power, and stimulus to sanitary effort. It is difficult to show this by statistics or tables, but my correspondence proves it in many ways.

2d. *To deal with nuisances, sources of filth, and causes of sickness.*—The larger proportion of this work is of a routine character, and only reported incidentally, except it involve the need of advice or assistance in enforcing regulations. There has been a steady increase in its amount even in townships, and the occurrence of preventable disease is made a constant reminder of the need of it. It has resulted in important changes in some of our larger towns, as the introduction of water-works, sewers, regulation of slaughtering, garbage disposal, etc.

3d. *To control offensive trades.* (Chapter 222, Laws of 1885.) This law enables a Local Board to deal promptly with those occupations which are either a nuisance or dangerous to health. In the majority of cases they have been butcher shops, stock-yards, and allied occupations, creameries, the keeping of swine, etc. A very marked improvement in the management of these industries began with the passage of this law and its wide publication and distribution. Prevention has done almost as much, for their regulation, as for the public health.

4th. *To enforce the report of the occurrence of infectious diseases of men, by physicians and householders.*—To take immediate measures to control the same and to report the action taken to the State Board. This duty being a matter of record, I am able to give the statistics of the principal diseases reported in this way, outside the great cities:

#### SCARLATINA.

DATE	CASES	DEATHS	LOCALITIES INVADED	COUNTIES INVADED
August 1, '84.....	30	1	7	7
August 1, '85.....				
August 1, '85.....	238	35	26	21
August 1, '86.....				
Aug. 1, '86 } 4 Mos	45	5	10	8
Dec. 1, '86				
December 1, '86.....	306	24	49	32
December 1, '87.....				
Dec. 1, '87. } 1 Mo.	31	2	9	7
Jan. 1, '88.				
January 1, '88.....	221	25	50	32
January 1, '89.....				
January 1, '89.....	725	53	93	54
January 1, '90.....				
January 1, '90.....	242	41	81	40
September 1, '90...				

## DIPHTHERIA.

DATE	CASES	DEATHS	LOCALITIES INVADED	COUNTIES INVADED
August 1, '84.....	117	35	17	9
August 1, '85.....				
August 1, '85.....	315	94	43	28
August 1, '86.....				
August 1, '86.....	86	26	15	9
December 1, '86....				
December 1, '86....	583	144	100	46
December 1, '87....				
Dec. 1, '87 } 1 Mo.	80	30	26	15
Jan. 1, '88 }				
January 1, '88.....	819	278	228	52
January 1, '89.....				
January 1, '89.....	1004	290	268	59
January 1, '90.....				
Jan. 1, '90 } 8 Mos	425	163	137	44
Sept. 1, '90 }				

## SMALL POX.

January 1, '85.....	38	3	10	5
January 1, '86.....				
January 1, '86.....	9	0	5	4
January 1, '87.....				
January 1, '87.....	3	0	1	1
January 1, '88.....				
January 1, '88.....	19	6	4	4
January 1, '89.....				
January 1, '89.....	13	0	4	3
January 1, '90.....				
Jan. 1, '90 } 8 Mos	0	0	0	0
Sept. 1, '90 }				

Nearly five years of continuous work in the trial of obligatory notification of infectious diseases of men.

In this way we have had immediate notification of the occurrence of the first cases in 325 different outbreaks of scarlatina; in 834 different outbreaks of diphtheria, and 24 different outbreaks of small pox during the past five years, or to bring it to the present year—since January 1, 1890—81 outbreaks of scarlatina, and 137 of diphtheria have been reported to me, and in every one proper assistance has been rendered, other localities in danger have been warned, individual cases have been traced, cared for and isolated, and, what is better than all, the disease has, in a very large proportion of cases, been confined to the first families infected. In view of the persistent character of the diphtheria poison, particular pains have been taken to insist on thorough disinfection, and, besides circulars, I have very frequently added a letter of details suited to the particular case, and answered questions in reply to notification. I am glad to report that some of the best work by Local Boards, in the control of diphtheria particularly, has been done by the Chairmen of Township Boards, with the counsel of the attending physician or myself. I do not see how we could do without this law, and, though its operation involves constant attention, it has proved one of the most valuable on the statute book.

5th.—*To control the infectious diseases of domestic animals.*—(Chapter 200, Laws of 1885.) The immediate object of this law was the control of

glanders, which our correspondence showed to be a common disease in 1884, very infectious and incurable in the horse; and communicable to man; but it was also intended to facilitate the control of diseases of cattle and hogs, particularly their invasion from without the State. It was just in time to prevent pleuro-pneumonia, which in the fall of 1886, was epidemic in Chicago, and invaded States and Territories near Minnesota, but did not get a foothold here. Other diseases of cattle have been cared for, and the spread of some restricted (as malignant catarrh). Three cases of glanders in man, and the probability of others not recognized, were reported in the fall of 1885. The following statistics show the annual record against this disease to October 1, 1890, from the date of the law, March 5, 1885.

## GLANDERS.

DATE	Animals Isolated as Suspected	Animals Killed	Animals Released	Localities Invaded	Counties Invaded
Mch. 1. '85 to Oct. 1, '85	232	132	99	76	31
Oct. 1, '85 to Oct. 1, '86.	151	193	58	63	34
Oct. 1, '86 to Oct. 1, '87.	185	118	67	78	39
Oct. 1, '87 to Oct. 1, '88.	248	194	54	81	40
Oct. 1, '88 to Oct. 1, '89.	102	57	45	59	36
Oct. 1, '89 to Oct. 1, '90.	82	67	15	40	24

NOTE.—Tax returns for 1887 gave 364,407 horses in the State. Assuming that to be correct, for subsequent years the per cent of killed to total living, average of 5 years, .041 per cent, and for 1889-90 it was .015, or 1 in 5,000, killed for glanders.

This record tells the story of a hard fight, not only with the disease, but with tricky dealers, and importation from outside the State.

That of 1889-90 indicates that the disease is decreasing steadily (compare with preceding years); and the distribution is less than ever before. If we could prevent the importation of infected animals, we should have little difficulty with the rest.

I doubt if a more successful and persistent fight against an infectious disease of animals has ever been conducted by local authorities anywhere. The evident determination is that the disease shall be put thoroughly under control and, if possible, crushed out. The share of the State Board in the matter will be stated a little later.

*The collection of vital statistics.*—For localities is, in St. Paul and Minneapolis, and in all townships, the duty of the clerks; in other cities and in villages it is the duty of the Health Officer. It will be remembered that this return was, by the law in 1887, required to be made monthly to your Secretary. The object of this change was to enable this Board to use the facts compiled from the returns, particularly of deaths, and their causes, in the constant search for the preventible causes of sickness and mortality; to locate the disease prevalence, and more promptly, take measures of relief. Large charts (specimens of which will be shown to the Board), are in constant use, in the office of the Board for the purpose of keeping track of the distribution of the diseases causing the greatest mortality, their relation to season, sex, age and locality, with any other facts bearing on cause which can be obtained. It has been a very difficult task to effect the change from a careless yearly return of births and deaths to a monthly report of constantly increasing accuracy. I am glad to report the hearty co-operation of medical men in the effort to make the returns of causes of death more trustworthy. During the first half of this year I have asked for a correction of the reported cause of death in 416 cases and received a prompt reply from 362—87%. To Town Clerks, 208 requests have been sent in the same time, and 168 replies received—80%. In this way over 700 corrections have been made in this single important item of the death cause.

(Concluded in next number.)



# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING, MINN.

CIRCULATION, 3,700 COPIES.—SUBSCRIPTIONS, FIFTY CENTS PER ANNUM.

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## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF OCTOBER, 1890. DISEASES OF MEN.

Diphtheria.....	{ cases, 39
	{ deaths, 7
Scarlatina.....	{ cases, 9
	{ deaths, 1

## DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	11
Reported during the month.....	3
Killed.....	2
Released.....	0
Isolated.....	0

Remaining Nov. 1st, 1890, isolated or not accounted for..... 12

NOTE.—Most of these are cases exposed to possible infection, and isolated for further observation.

## MINNESOTA WEATHER SERVICE—REPORT, OCTOBER, 1890.

IN CO-OPERATION WITH THE U. S. SIGNAL SERVICE.

Furnished by Corp. John Healy, Observer, Signal Service, in charge.

STATIONS.	ATMOSPHERIC PRESSURE.					TEMP. OF AIR.		Monthly Precipitation. Inch or more...	No. rainy days, .01 or more...	No. of cloudy days . . . . .	No. of fair days.....	No. of clear days . . . . .	No. of hail storms.....	No. of thunder storms..
	Mean reduced barometer...	EXTREME.			Monthly mean...	Monthly range...								
		Highest barometer.	Date.....	Lowest barometer.			Date.....							
Crookston.....	29.93	30.36	26	29.17	13	43.2	51	2.92	4	11	16	4		
Duluth.....	29.93	30.36	26	29.17	13	45.0	42	3.03	12	11	16	4		
Farmington.....	29.93	30.36	26	29.17	13	45.1	42	2.42	8	15	10	6		2
Grand Meadow.....	29.93	30.36	26	29.17	13	43.4	52	3.20	10	12	14	5		1
L. Winnebigoishish dam.	29.93	30.36	26	29.17	13	41.6	48	2.55	9	13	14	4		
Leech Lake dam . . . . .	29.93	30.36	26	29.17	13	41.4	54	2.59	11	12	14	5		
Markato.....	29.98	30.41	26	29.39	13	47.7	47	2.57	12	11	11	9		
Medford.....	29.98	30.41	26	29.39	13	44.3	57	2.89	8	12	9	10		
Minneapolis.....	29.92	30.43	26	29.41	13	44.6	50	2.46	8	12	12	1		
Moorhead.....	29.92	30.43	26	29.41	13	44.8	52	2.10	11	18	12	1		
Montevideo.....	29.92	30.43	26	29.41	13	46.1	57	1.90	6	12	15	10		1
Morris.....	29.92	30.43	26	29.41	13	44.0	51	1.64	7	6	15	10		
Northfield.....	29.92	30.43	26	29.41	13	45.0	50	2.31	10	12	10	9		
Pine River dam	29.92	30.43	26	29.41	13	40.8	53	2.62	9	24	2	5		
Pokegama Falls.....	29.92	30.43	26	29.41	13	40.4	64	2.81	9	10	8	13		1
Red Wing.....	29.95	30.35	26	29.24	13	47.2	47	3.38	13	10	8	13		
Rolling Green.....	29.95	30.35	26	29.24	13	44.9	49	2.15	10					
St. Charles.....	29.95	30.35	26	29.24	13	42.0	57	4.10	8					
St. Paul.....	29.94	30.37	26	29.22	13	46.4	49	2.79	12	15	11	5		1
St. Vincent.....	29.89	30.43	26	29.27	14	42.0	55	2.79	10	21	8	2		
La Crosse, Wis.....	29.98	30.29	25	29.21	14	48.8	51	5.14	15	19	6	6		
Faribault.....	29.98	30.29	25	29.21	14	47.3	59	3.13	12					
Mean.....	29.941	30.377	26	29.273	13	44.3	51.7	2.80	9.7	14.2	10.4	6.4		

GENERAL REMARKS—The month was from 2 to 3 degrees warmer than usual in the north-west counties, while in the southern part of the State there was a deficiency of about one degree. The precipitation was in excess 2.62 inches at La Crosse, .73 at St. Vincent .74 at St. Paul, .50 at Minneapolis and .08 at Duluth; and at Moorhead the fall was deficient .38 of an inch.

## DISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF OCTOBER, 1890, REPORTED UP TO NOVEMBER 20.

Total Deaths—812; 462 males, 350 females; 45.69% in St. Paul and Minneapolis (pop. 297,894); 5.42% centres over 10,000, (pop. 50,933\*).

Ages at Death—Under 1 year, 30.29%; 1 to 5 years, 13.54%; 5 to 10 years, 6.77%; 10 to 15 years, 1.97%; 15 to 20 years, 3.94%; 20 to 30 years, 8.62% 30 to 50 years, 14.04%; 50 to 70 years, 12.44% 70 and over, 8.37%.

Measles—But 3 deaths.

Scarlatina—6 deaths; 4 in county, 2 in cities.

Diphtheria—Mortality, 78 deaths; twice as great as last month, with 20 centres of infection in 17 counties, though less than in October, 1889. This is the season of greatest morbidity, mortality and distribution.

Croup—Mortality least the last three years.

\* Stillwater (pop. 11,239) excluded; no report for September having been received up to November 20.

*Enteric (Typhoid) Fever*—But 36 deaths, (little over half as many as in October, 1889) in 17 localities and 17 counties; over 60% in cities.

*Diarrhoeal Diseases of Children*—63 deaths; not half the mortality of last month, and same as for October, 1889.

*Tuberculosis*—63 deaths; 21 in country, 40 in cities. Phthisis was responsible for 58 of this number.

*Bronchitis*—But 15 deaths; 13 in cities, 2 in country; 11 under 13 years of age.

*Pneumonia*—32 deaths; nearly double the record of September, and greater than for October, 1889. Nearly one-half under 3 years of age; 81% (26) in cities.

*Still and Premature Births*—59, of which 43 in cities; 37 or 62.73% of total in St. Paul and Minneapolis.

**TUBERCULOSIS.**—The newspapers are as full as the medical papers, of Koch's last discovery. He is not ready to report, but does so partly, and under protest. Watch and wait is the rule in such cases, to avoid the unseemly haste with which Brown-Sequard's last discovery was taken up, and experimented with, to the injury of patients and of the reputation of the medical profession for judical and trustworthy deliberation in matters of so great importance. There are not facts enough published. The preparation is still a secret, and Koch's own judgment not fully formed. It is very likely a filtered culture of the bacillus to be used by hypodermic injection. All will join in the hope that the fair promise of to-day may be justified by the touchstone of every-day trial. None should forget that Pasteur led the way, and Chamberlain devised the filter which made Koch's discovery possible.

**THE HEALTH OF SCHOOL CHILDREN.**—We are now in a position to deal with this subject, and a space under this title will be devoted to it. This month we give the law, and an interesting table, showing the diseases most fatal at the school-going ages.

**DIPHTHERIA.**—The usual rise in morbidity, mortality and distribution has occurred, and an epidemic is threatened in some sections of the State. Since the last issue the Secretary

has been twice called to different villages to assist in the control of this disease. In both instances there had been a neglect of the plain law in the matter, and a consequent increase in distribution and mortality. Isolate all reasonably suspected patients, get medical sanitary advice promptly, thorough disinfection afterwards of *persons*, clothing and things. Report all cases to the Secretary of the State Board *promptly*.

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**I**NFECTIOUS DISEASE POSTERS.—These large cards to use upon houses where there is diphtheria are now ready in English-German, English-Norwegian, and English-Swede. Others are preparing. State which you want in writing for them.

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#### INFECTIOUS DISEASES OF MEN.

*Railroad transportation of persons having infectious disease.*—Every year complaint is made that such persons travel by rail, endangering other persons, and taking an infectious disease to a new locality. The attention of the railroads has been frequently called to their responsibility in the matter, in various ways. The attached circular letter has been sent out recently and is now submitted to Local Boards of Health with reference to their responsibility in travel by infected or sick persons.

The essential fact, as respects our present ability to deal with these cases, is this, there is not a proper isolation hospital in the State. There are several pest houses, buildings intended for the care of small-pox, but, the best of them, unfit for the isolation of travelers suffering from enteric (typhoid) fever, diphtheria, scarlatina or suspected small-pox. Most Health Officers can tell, from experience, the difficulties encountered in finding accommodations for these diseases among their own citizens, in the event of a sudden emergency. This clearly understood, here is an illustration of the easiest phase of the difficulty. A woman with her two children was visiting in Wabasha; the oldest took sick and her physician told her the disease was diphtheria. He also notified the Health Officer, who started to find a place where he could provide for them. Meantime the woman, fearing to be detained, took the first train quietly for St. Paul. But some one gave the conductor a hint that the disease was diphtheria; he put the family by themselves in the smoking car, which was nearly empty, and telegraphed me to meet the train. I found a severe case of diphtheria with abundant membranes. Instructed the conductor to keep them from all association with others and take them to St. Paul. Telegraphed the Health Officer there to meet and care for them. He did so and wrote me a courteous note the next day, reporting the family safely isolated. H.



CIRCULAR LETTER TO RAILROADS.

STATE BOARD OF HEALTH OF MINNESOTA, }  
SECRETARY'S OFFICE, }  
RED WING, September 25, 1890.

General Manager.....

DEAR SIR:—This Board have abundant evidence that small pox, scarlet fever, diphtheria and typhoid fever, are frequently carried, by rail, in the persons of the sick, exposing fellow travelers to infection, and transporting infectious disease from one part of the State to another.

In this way new centres of infection are started, unknown to the sanitary authority, and only discovered by the occurrence of new cases. The infection of the three diseases first named, is in the discharges from the mouth and skin, in the last named it is in the discharges from the bowels. October is the month of greatest prevalence of diphtheria and typhoid fever, though they occur every other month.

Relying on your hearty co-operation, I have to suggest that you can help us to restrict these diseases, by instructing your station-masters to call the attention of their Local Board of Health, to sick persons seeking transportation, and by directing conductors finding such cases to telegraph Health Officer of place of destination to meet and examine them.

I am sure you will agree with me that no person, having an infectious disease, should be permitted to travel except under peculiar circumstances, and by the authority, and under the responsible direction of a Board of Health. In case of doubt or inability to find the local authorities, if they will telegraph me I will assist promptly. Asking early reply,

I am yours truly,

CHARLES N. HEWITT, M. D.,  
Secretary and Executive Officer.

VACCINATION IN ENGLAND AND WALES IN 1887.—The latest returns in the last report of the Local Government Board, 1889-90, compared with anything done in America, is a remarkable record, and yet the report complains that the per cent unaccounted for by official vaccinators—7.1% of all born—is the largest since the law for compulsory vaccination was enacted (1871).

	TOTAL	PERCENT.
Total births in 1887 registered in England and Wales.....	886,196	100
Total children born in 1887 successfully vaccinated .....	733,980	82.8
Total children born in 1887 who died before vaccination....	87,827	9.9
Total children born in 1887 who had small-pox, and so not vaccinated .....	—	0.003
Total children born in 1887 insusceptible after three trials..	1,556	0.2
Total children born in 1887 not accounted for.....	—	5.9

In other words, deducting the “dead before vaccination,” 91.9% of the remainder have been successfully vaccinated, leav-

ing 8.1% of whose vaccination there is no official evidence, the largest proportion since the compulsory vaccination act went into effect in 1871.—*19th An. Rept. L. Govt. Bd., 1889-90.*

*The goat as a vaccinifer.*—Hervieux, the director of vaccination in the Academy of Medicine, in Paris (*Bulletin de l'Academie de Medecine* 20 Mai 1890, p. 511; *Rev d'Hygiene*, June, 1880), has repeated the earlier experiments showing that vaccine, of any origin, may be cultivated perfectly on the goat, which affords a very reliable vaccine, and one not inferior to that of the calf. The goat is refractory to tuberculosis (Nocard, et al) but is rarely found in the market, and is rarely used for food. It has little room for the scarifications (20 or 30), while the calf may afford a hundred.

### INFECTIOUS DISEASES OF ANIMALS.

*Diphtheria and its prevention.*—Here is the last word by Lœffler, the discoverer of the bacillus, taken from his paper on the subject at the recent International congress. He agrees with Roux and Yersin, so far as their paper went; advises to keep convalescent children from school for at least four weeks; to disinfect clothing, bedding, linen, utensils by boiling or by steam; to cleanse the floor and walls with warm solution of corrosive sublimate (1 in 1,000); to clean the walls and furniture with bread. He agrees with all the rest of us, that the disease is promoted by dampness and darkness. He states that the bacilli exist outside the body at 20 C. (69 F.) and that they develop well in milk. He makes a very important assertion, in direct contradiction to Klein, so far as calves and cats are concerned, that the disease affecting pigeons, fowls, calves and pigs, which resembles diphtheria, is not caused by the bacillus of human diphtheria, and that Klein's experimental transfer of human diphtheria to cats needs confirmation. I saw something of Klein's work in this matter, and Lœffler has seen the cultures, which Klein sent to him. I am satisfied that Klein has made out so much of a case that we should be very unwise not to take the precautions his work suggests, which is to watch the cats of an infected family, and to refuse milk in any way liable to the infection of diphtheria.

H.

*Diphtheria from birds.*—The disposition to charge the animal kingdom for so many of our plagues, must not be permitted to lay blame where it does not belong. In a report on this subject to the Societe du Medecine Publique in June last, M. le Dr. St. Y. Menard read a paper founded on his own clinical and pathological inquiries, and upon the bacteriological work of Prof. Straus. In brief, they conclude: that the exudate in the diphtheria of birds is thick, curdled, resembling tuberculosis, and cheesy matter, but differing entirely from the fibrous false membrane of human diphtheria. The bird variety is at times very contagious and fatal among birds, in some years, in the jardin d'acclimatation, but not a case of transmission to man has been observed. He quotes Lœffler, Cornil and Megnid, as showing that the two diseases are due to microbes, entirely different in their morphology and biological peculiarities. (*Rev d'Hygiene*, June, 1890.) On the same subject the *London Lancet* copies

from *Centralbl Allg. Path. u. Path. Anat.* No. 13, the conclusion of an article by Dr. Maffucci, of Pisa. His results are interesting, with the French view. 1st. Fowl tuberculosis differs in its cultures from mammalian. 2d. It can be cultivated and retain its pathogenic properties between 37 C. and 47 C. 3d. Guinea-pig and dog can destroy this bacillus, its inoculation resulting in abcess. 4th. Guinea-pigs may die of marasmus with no tuberculosis. 5th. Rabbits may exhibit general, as local, form of tuberculosis, but with a special type of tubercule and more bacilli than occur in fowls. 6th. That tuberculosis in fowls has greater power of resistance to physical agents. 7th. That the fowl is insusceptible to mammalian tuberculosis. He asks three questions. 1. Whether there exists in man a form of tuberculosis, local or general, similar to that of fowls? 2. Whether one of these two forms is an attenuation of the other, and if so, which? 3. Whether the two forms of tuberculosis may have the same origin, modified in the different classes of animals? These questions have a direct bearing on the practical question of tubercule in the flesh of birds and their association with men, chiefly children.

**MEAT INSPECTION**—In the July number I quoted Principal Walley's opinion on tuberculosis from his "Practical Guide to Meat Inspection," which represents the best work of this kind in Scotland. He read, the other day, a paper to the British Medical Association, of which the abstract given by the *Sanitary Record*, of Aug. 15, 1890, is all yet at hand. He considered the subject under three heads. "1st. The necessity for a system of meat inspection. 2d. How best to make it. 3d. The principles to guide in making it."

1st. Meat inspection was necessary for the reasons (*a*) that the British were the greatest flesh eaters; (*b*) that the vast majority of the flesh-eating portion of the public were utterly ignorant of the characters which distinguished good from bad meat; (*c*) that through the medium of animal flesh many lives have been lost and many people had suffered injury to their health; and (*d*) that the flesh eaters had a right to protection from such dangers, and from the evil designs of those who profit by the trade in bad meat, and also by the fact that there is no law to compel them to declare from what source the flesh they sold had been obtained, nor to declare the nature of the disease from which an animal had suffered. 2d. In order that meat inspection should be properly carried out three things were necessary, (*a*) that all animals intended for human food should be examined prior to slaughter, by competent persons; (*b*) that not only the carcasses but the viscera of animals intended for food should also be examined; (*c*) that those persons whose duty it was to carry out such inspection should possess the necessary knowledge of their work to enable them to discharge the duties devolving upon them in an efficient manner. Inspection of all animals, prior to slaughter, could not be carried out in all cases; for example, in those instances in which, as the result of accidents, it was found necessary to slaughter animals in places other than abattoirs, and also in case of dead meat from foreign countries; but where animals were killed on account of injuries or sudden illness, the internal organs should be sent to a licensed abattoir, or receiving house, with the carcass for inspection, and as a guide to the inspector in his work; further, that all private slaughter houses should be abolished, or where, as in small villages or towns, a public slaughter

house could not be supported, they should be licensed and placed under the direct control of the sanitary authority. He held that in all abattoirs there should be one or more lay inspectors, but they should not be empowered to condemn flesh; for this purpose a sanitary board (consisting of a medical officer, a veterinary officer and a lay inspector) should be established in connection with each abattoir; but inspectors, lay or professional, should only be appointed after submitting themselves to examination by a competent examining body, and the decision of the Sanitary Board to be final. The microscope should be brought into requisition in dealing with the flesh of animals that had suffered from micro-parasitic or parasitic disease. 3d, Flesh should be considered unfit for food if its physical characters presented gross departures from the normal, as from its being excessively lean, or anemic, or soft, or moist, or dark of color; or in which effusions, or extravasations or evidences of commencing decomposition were detected; or from which an unnatural odor was given off, or which possessed a distinctly abnormal taste. Flesh should be considered as unfit for food when the animal from which it was derived has been physicked to any extent, or had suffered from such maladies as pyæmia, septicæmia, glanders, farcy, rabies, or anthrax, or from any malady, from the effects of which important nutritive changes have taken place, or in which there was a probability of the malady being transmitted to the human subject by ingestion. The question of the condemnation of the flesh of parturient animals, and of those that have suffered from specific fevers, such as swine fever, pleuro-pneumonia, foot and mouth disease, or tuberculosis, or from such hæmal lesions as black quarter, was one for the grave consideration of the Association and for all sanitarians." The Section on Public Health of the British Medical Association voted to ask legislation for the abolition of private slaughter houses, and the establishment of public slaughter houses, with skilled inspection of meat. H.

*Texas fever.*—Dr. Salmon, chief of the Bureau of Animal Industry, makes the following statement with reference to Texas fever, which is of great interest as showing that a similar parasite to the microzoaire of Laveran is its real cause. The experimental evidence is the work of Dr. Theobald Smith, in charge of the Bacteriological Laboratory of the Department of Agriculture. "Texas fever belongs to the malarial group of diseases. It is caused by small micro-organisms which are found in the red corpuscles, and are not bacteria, but bodies of the nature of the malarial germ of Laveran. Pastures may be infected by the ticks from the bodies of Southern cattle,"—*Jour. of Comp. Med. and Vet'y Archives*.

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#### VITAL STATISTICS.

FOR 1888, 1889, 1890.

The circular letter for back returns has brought in a considerable number. *Only such as have not been sent in before are wanted, not duplicates.*

The returns for these years are about completed and ready for the printer, and as the census returns of population are coming in we shall be able to compare mortality with population.



**GRAPHIC CHARTS**—We begin this month a new experiment in the first of a series of these charts to exhibit in a very effective way some of the useful conclusions which we can now draw from the vital statistics. The chart with this number represents the comparative mortality by months from *typhoid fever* for the years 1887, 1888, 1889 and 1890 for nine months. The figures at the sides are in order of tens, so that each horizontal space represents ten deaths. The perpendicular lines represent months. The irregular lines are for years, each different. For example, 1887 (———) had a total loss of 717 deaths of typhoid fever. The mortality was least in July (34), greatest in October (158). In 1888 (-----), total mortality, 643; least in July, 25; greatest in October, 134. In 1889 (-o-o-o-), total mortality, 663; least in July, 24; greatest in October, 96. Note that the greatest mortality in the three full years recorded was in the fall, next in late winter and least in mid-summer. The chart enables us to see the comparative mortality of years at a glance, and it is encouraging to discover a steady decline.

*Mortality during first year of life.*—Dr. Tomkins, M. O. H., Leicester, in last annual report states that from figures lately published, of every 1,000 children born in Norway 106 die during the first year; in Sweden, 137; in France, 169; in Prussia, 217; in Italy, 220; in Hungary, 254; in Austria, 258; Bavaria, 317; in Wurtemberg no less than 329.—*Sanitary Record*, Aug. 12, 1890.

### HEALTH OF CHILDREN IN SCHOOLS.

EXCERPT FROM CHAPTER 132, LAWS 1883.

**SECTION 23.** That it shall be the duty of every person knowing of any person sick of any contagious disease dangerous to the public health \* \* \* to at once report the facts to the Local Board of Health in regard to the disease, condition or dwelling place or position of such sick person.

**SEC. 25.** That every person being the parent or guardian, or having the care, custody or control, of any minor or other person, shall, to the extent of any means, power or authority of said parent, guardian or other person, that could properly be used or exerted for such purpose, cause and procure such minor or person under control to be so promptly, frequently and effectively vaccinated that such minor or individual should not take or be liable to take the small pox.

**SEC. 26.** That no principal, superintendent or teacher of any school, and no parent, master or guardian of any child or minor, having the power and authority to prevent, shall permit any child or minor having scarlet fever, diphtheria, small pox or any dangerous, infectious or contagious disease, or any child residing in any house in which any such disease exists, or has recently existed, to attend any public or private school until the board of health of the town, village, borough or city shall have given its permission therefor; nor in any manner be unnecessarily exposed, or to needlessly expose any other person to the taking or the infection of any contagious disease.

As in duty bound we begin this department, as all others in PUBLIC HEALTH (so long as it is the official organ of the State Board of Health), by publishing and calling attention to the law on the subject. It will be seen that it applies to the teacher in the private, denominational and public school alike,

and that the duty of reporting and warding off infectious diseases belongs to them in their private lives as citizens, and their public lives as teachers.

Section 23 relates to all persons, including teachers.

Section 24 includes teachers as having care, custody and control of children.

Section 26 relates to teachers alone. It is so plainly written as to need no explanation, and co-ordinates the work of teacher and Local Board of Health in a way which should make them well acquainted.

The chairman of the Township Board of Supervisors is the one to apply to if your school is in a township. In villages and cities the Board of Health is elected by the Council and the Health Officer (who must, if possible, be a physician) is the executive officer to whom teachers will report, and who will give all the aid in his power. In case of doubt any teacher may write direct to the Secretary of the State Board of Health, with the certainty of a prompt reply, and hearty co-operation.

But the average teacher asks, "What can I do? I should be glad to assist if the way was clear; appreciate its importance, etc."

To show the way is exactly what is proposed to do here. Many doubts and difficulties will be removed, and, if you will help, mutual *co-operation* between Boards of Health and teachers will speedily be an established fact. "But just what is the need for this co-operation?" asks the teacher. Study the following table and see the *statistical* proof of the need, which will be enough for this time.

Teachers will please note that the totals of deaths for all ages and for certain periods of years from the same disease, enables each one to apply the table to the ages of the pupils of your individual school.

You will find many interesting and unexpected facts in the table, and you may rely on its accuracy, as every individual death has been carefully verified in my office, and when necessary, by the physician who attended the case at death.

This table shows the mortality for three years, between the ages of 5 and 20 years, from all causes, by periods of years, and the percentage of mortality at school going ages to total of deaths of all ages, from the same disease.

DISEASE	Total d'ths of all ages for 3 yrs. 1887-88-89	Total d'ths 5 to 20 yrs. for 3 years.	Total d'ths 5 to 10 yrs for 3 years.	Total d'ths 10 to 15 yrs. for 3 years.	Total d'ths 15 to 20 yrs. for 3 years.	Per cent of mortality between 5 and 20 yrs. to to- tal death av. of 3 years.
Diphtheria.....	2543	1321	883	334	105	51.9
Scarlatina.....	678	224	165	40	19	33.0
Measles.....	626	131	60	33	43	22.0
Croup.....	776	167	112	47	8	21.45
Typhoid fever.....	1932	529	95	132	302	37.2
Phthisis.....	3598	532	39	105	388	14.7
Serofula.....	191	38	15	12	11	6.6
Pneumonia.....	2411	309	131	64	114	11.4
Bronchitis.....	1092	55	32	9	14	5.0

*Memoranda as to relation of schools to infectious disease.*—Dr. Barwise, M. O. H., Blackburn, Eng., is quoted in *Sanitary Record*, Aug. 15, 1890: "It is by school managers insisting on children with indications of feverishness, suffusion of face, watering of the eyes, and other premonitory symptoms of measles, remaining at home for two or three days, until these symptoms have passed away, or the disease has become apparent, that we may look for a reduction of the death rate of measles. No child coming from an infected home should be allowed to return to school for four weeks." He proposed a clinical thermometer in the hands of the superintendent, who might by its use discover cases not otherwise suspected. Also to begin school every morning by a show of hands, taking most care with those recently absent from school. Any child whose hands were peeling or shedding scales should be sent home as liable to convey the infection of the disease.

Dr. Fletcher, M. O. H., Ormsirk Rural District, at last meeting British Medical Association: "Cases of infectious disease might be notified, 1st, by death returns; 2d, by school inspection officers; 3d, medical practitioners under Notification Act; 4th, by school teachers. All these were compulsory in his district. A circular had been issued to teachers. As to closure of school, he concludes it is better to close early than to wait for a given percentage of absentees. As to length of time of closing, he thought a fortnight too short. Disinfection necessary not only for schools but for private dwellings.—*Sanitary Record*, Aug. 12, 1860.

**PUBLIC HEALTH IN OTHER STATES.—MARYLAND.**—In his last quarterly report Dr. Chancellor, the Secretary, traces a direct relation, he thinks, between the quantity and character of the rain fall and the oscillations of typhoid fever, in certain localities where the filth is washed from the surface and soil, into the water supply. Heavy rainfalls followed in a few weeks by increased mortality from typhoid, several weeks later, and necessarily an increased number of cases. As the disease has an incubation of one to two weeks, and if fatal is so usually from third to fifth week, he thinks the apparent coincidence may be something more.

*Diphtheria.* A striking illustration of the infectiousness of a corpse—"A child died in in Wilmington, Del., of diphtheria. A physician certified the death to have been from pneumonia; the body brought to Prospect, Md., in ordinary coffin, and taken to grandfather's house, where casket was opened and body viewed by the family. In a few days outbreak of diphthtria in that house and in less than a month there had been six or seven cases and five deaths of the malignant disease. It spread to other families."

*Milk Inspection*—Same position taken as here in Minnesota—that disease cause is more important than mere adulteration—tuberculosis than added water or missing cream.

**CONNECTICUT.**—Dr. Lindsley, the Secretary, reports an outbreak of small-pox, the contagion coming to the first case by means of rags in a paper mill, and from the first case to three other cases.

**MICHIGAN.**—Dr. Baker, the Secretary; writes, referring to my statement that diphtheria does occur in the same individual the second time (page 79 last

number of this journal) "that it seems to him probable that it does not recur in the same individual as much as is generally supposed," and he sends a table which he thinks "strengthens his belief that diphtheria does to quite a considerable extent protect against a subsequent attack." I have not the means to reprint the doctor's valuable table, but quote the last paragraph of his letter referring to the statistics of diphtheria in Vermont. He concludes that "it is extremely strong evidence not only that diphtheria is simply a communicable disease, but also that it is a disease in which one attack tends to protect against a fatal result of a subsequent attack." The italics are mine to call attention to the difference of the doctor's first and last statement. The last is, not unlikely, true. Without study of the records it seems probable, but I am sorry to state, that my experience is that one attack of diphtheria is no sure protection against another, and that to expose a child to the disease because he had once had it would be an unjustifiable and a dangerous act. Nearly 50% of our deaths from diphtheria are under 5 years of age and nearly 80% under 10 years. It is very rarely fatal after the twentieth year with us. When it is so the victim is likely to be the mother or other constant attendant on a fatal case, who yields to the poison after fatigue and grief have broken down the protection of age.

H.

*Cremation in France* is now an established fact, having been introduced into Pere Lachaise, where, since August, 1886, there have been 735 incinerations, of which 35 at request of families, 432 "debris d'hopitaux," and 217 embryos. The time occupied by the burning is an hour for adults, and in summer often 50 minutes is enough. The expense depends on the funeral display, and the decoration of the building—from 250 to 50 francs (from \$50 to \$10).—*Rev d'Hygiene*, Mai, 1890.

*Sanitary improvements in the arts and manufactures.—White Lead.*—Every one knows the dangers of the old stack or Dutch process of manufacture. Professor MacIvor, of England, is credited in *Sanitary Record* with one which has stood the test of sufficient trial. Litharge is made from lead ore and thoroughly washed. Mixed in a vat with acetate of ammonia in solution and stirred for six hours, the lead is taken up by the solution, which is then pumped over into another vat and the lead precipitated by carbonic acid, the acetate of ammonia remains in solution and is used again as before. After washing, the white lead, *always moist*, is pressed dry and again washed till pure, and, again pressed, is dried and ready for use. No dust; no danger.

#### PRELIMINARY REPORT OF DR. HEWITT, SECRETARY, TO THE STATE BOARD OF HEALTH.

(Concluded from last number.)

*Miscellaneous work of Local Boards:* There is a good deal of important duty difficult to classify but which makes up a considerable share of what is done, routine work, every-day duty, very essential and more constant than the occasional struggle with infectious disease.

There are other important statements as to the work of Local Boards, which, as they will be mentioned in my annual report, need not be detailed in this



summary. Taken together, the data here given prove that these Boards, in Minnesota, are gaining in regularity and efficiency every year.

*The Compensation of Health Officers* is still an unsettled question. Until some common standard can be agreed upon, it will be difficult to secure the best, and in many cases, any medical service for this important duty.

*The work of the State Board.*—By the legislation of 1883–85–87, the duty of the State and Local Boards was correlated in every department of sanitary effort, so that they are, in many respects, interdependent. This was deliberately arranged to prevent any conflict of authority, and to secure to the Local Boards all the independence of action needed for a vigorous autonomy, without losing the sense of responsibility to other Boards in mutual co-operation, which is a marked feature of the Minnesota Health Service.

As to the work in the office of the State Board, it is of two distinct sorts:

1st. *Co-operative relations with Local Boards in all the duties which are, by law, common to both.*

(a) *The organization, perpetuity, and efficient operation of the Local Boards.*—This is particularly true of the Township Boards, all of the members of which are elected yearly, and if it were not that a portion of the Chairmen and Clerks are re-elected, we should have, every spring, a wholly new class of almost 4,000 men to educate in their duties as members of Boards of Health. But each year since we have studied the matter the proportion of Chairmen and Clerks re-elected, has increased, so that last spring, in 1304 Township Boards of Health, 55.5% of the Chairmen, and 77.6% of Clerks were re-elected. This speaks well for those gentlemen and is a great help in our work of assisting them to increasing efficiency in the care of their local sanitary interests.

*Village Boards.*—There is still too much indifference on the part of some village corporations to the organization and support of their Boards of Health. If sudden disease of men or animals, or other sanitary necessity occurs, they are among the first to call on the State Board for help, and among the most urgent, but some of them refuse their Health Officer the most beggarly salary, and too often fail to give him support in the doing, even the unavoidable duty of his office. As a very serious consequence of the disagreement between physicians and local authorities, there are villages who report themselves unable to secure the services of a local physician as Health Officer, and they usually apply to me or an adjoining health officer in emergency. Until we can agree upon some common rule for regulating the compensation of local health officers, and aid in its enforcement, there will continue to be trouble in some localities.

(b) *Infectious diseases of men.*—Our information as to these comes through two official channels, viz.: The obligatory notifications, and the monthly returns of causes of death, which are also obligatory. In addition to these comes a very kindly notification by the attending physician, or the local board asks for counsel, or a worried neighbor, or, sometimes the infected family itself, applies for help. In these and other ways our knowledge of these diseases, in villages and townships, is constantly becoming more prompt and accurate, and a very friendly feeling of mutual co-operation is making routine work easier and

pleasanter. The index of the correspondence on this one subject from January 1, 1890, to October 1, foots up over 500 letters, but the number is no evidence of the variety and importance of the details, which include the whole range of inquiry as to danger, isolation, separation of sick and well, attendance, expense, responsibility, disinfection of persons, places and things, and much relating to the particular outbreaks. The State Board has been able to increase the number of township boards who are heartily doing good work in this direction in the way indicated.

There is one infectious disease, Leprosy, confined to one nationality in our population, and in them, to persons born abroad, about which the State Board ordered special investigation, last spring. We have had a committee on that subject ever since 1873 who have made almost yearly reports and kept the disease under medical observation, by men perfectly familiar with it, longer than has been done elsewhere in this country. The recent alarm on the subject, and the demand for national legislation, has drawn attention to our experience, but as it is not of a character to accord with current action outside Minnesota, it is proper to give the facts here from Dr. Gronvold's report, which will be printed in full in the October number of PUBLIC HEALTH IN MINNESOTA and in our annual report.

There are sixteen cases in the State, 13 males and 3 females. The youngest is a man aged 28 years; the oldest also a man, and though he has had the disease 17 years and is 74 years old, he is reported in good health. One man of 60 has had the disease 30 years, and another 50 years old has had the disease 32 years. In some of the cases the disease seems at a standstill. In no case has the disease proved hereditary as there are, in the State many children and grand-children of lepers, with some great grand-children, none of whom show any symptoms of the disease. The infection requires repeated and prolonged inoculation even when deliberately attempted. Experience has shown that in this country, after 40 years of trial, the common precautions of separate bed and personal cleanliness are sufficient, but we are not to lose sight of possibilities, and a close watch is maintained.

(c) *Infectious diseases of domestic animals.*—Notification of these diseases is obligatory, and reports concerning them from Township Boards are more numerous, in proportion to the number of outbreaks and cases, than of some of the diseases of men. The support of the family is largely dependent on the health of domestic animals, and the most striking evidence of the value of sanitary co-operation is, therefore, often given in this way. Copies of the law bearing on the particular outbreak; with the necessary blanks for professional certificates, for isolation or slaughter orders, circulars describing the disease, and directions for its control, disposal of dead, and disinfection, are always promptly forwarded with request for further information to which is added when needed, a personal letter to the Chairman. Under the law each Local Board selects its own Veterinary Surgeon, as the local authorities select their Health Officer. This plan has worked so well that I am satisfied it is the best.

Since March, 1885, (when the State Board was given formal charge of the matter,) there have been reported to me 453 different outbreaks of, supposed, infectious disease among domestic animals (about 40 since January 1, 1890).

Many of the supposed diseases, on investigation, prove to be something else, and less dangerous, but the result is that the number of farmers who are able to act intelligently and promptly in the care of supposed infectious disease, is increasing, as occasion is taken, in every township where such disease is reported, to distribute freely the circulars giving information on the subject, which are then likely to be read with interest.

In each instance, beside the regular assistance noted above, the Secretary has given particular attention to all inquiries for information; distributed the proper printed matter freely, and when necessary, gone to the locality and given personal assistance and advice to the Local Board.

A very considerable number of diseases have been traced directly to ignorance or neglect, and advantage has been taken of such cases to impress the lesson where it would do the most good. Local Boards are beginning to learn that animal diseases may be *prevented* easier than cured, or gotten rid of, and so the sanitary condition of pastures, yards and barns is more and more attended to, as is the character and amount of food and drink as affecting health.

(d) *The collection and publication of Vital Statistics.*

As closely allied to the returns of the sick, the returns of births and deaths will be found to be more perfectly tabulated than heretofore. Especial attention has been paid to individual diseases, especially those causing greatest mortality, and a large amount of important data is given in available shape. It is impossible to give the details in this summary.

I am able to show to the Board graphic illustrations of the use made of these returns in our office in the search for the actual facts of disease prevalence in our population. Their value is increased by the fact that we have the assistance of the physicians of the State in the revision of the death causes, and the verification of infectious diseases. As before stated, I have, by their aid, verified or corrected over 700 of what seemed doubtful returns, since January 1, of the present year, for which they deserve the thanks of the State Board. I do not know that the profession have given that important assistance in any other State. The township clerks, though at first many of them were opposed to the system of monthly returns, and to the trouble often involved in getting the death cause, are more and more coming to understand its value, and importance in the matter of legal proof, in questions of inheritance.

To keep up a high standard of promptness, and accuracy in the returns of births and deaths, from over 1,500 different localities, is not an easy task. An examination of my report on the vital statistics of the years 1887-88-89 and 1890 to August 1, will enable any one to judge of the gain in these respects. The following are the general results for those years: *The vital statistics for 1888-1889, (and 1890 to August 1): Births.*—In 1888, 33,191; males 17,114; per cent, 51.56; females, 15,971; unknown, 106. In 1889, 31,587; males, 16,273; per cent, 51.52; females, 15,173; unknown, 141. *Deaths.*—In 1888, 15,018; males, 8,146; females, 6,814; unknown 58. In 1889, 14,807; males, 8,024; females, 6,732; unknown, 51. A detailed analyses will be found in my report.

2d. *Original work in various ways suggested by our experience, for which the Library and Laboratories are essential.*

*The Library* is increasing, not only in volumes, but in value, the additions being such as are called for by our work. Dr. A. E. Senkler and Dr. Hand's family have presented to the library many books from the library of our late president, Dr. D. W. Hand. I am preparing a catalogue of them and propose to keep them together. Full details as to the library in the report.

*Laboratories.*—The work done here was interrupted when I went abroad in November. Since January 1, 1888, it includes: Water analyses, 122, other chemical, microscopical and bacteriological investigations, about 50.

I have a good stock of bacteria in culture (most of them typical) and a collection of samples of vaccine virus put up in Ireland, England, Germany, Belgium and Holland, which I brought home with me from abroad. I have also collected a large amount of valuable information as to methods of garbage and sewage disposal, the control of offensive trades, infectious disease management, meat inspection, etc., which I shall write up into available form as the Board may direct.

CHARLES N. HEWITT,

Secretary and Executive Officer.

THE following are copies of the posters to put on houses infected by diphtheria. They are printed on strong manilla paper, and will be furnished to Local Boards of Health as needed. They are *all* in English, with translations into German, Norwegian and Swedish, and other languages if need be. *Always specify the language used in your district.*

Posters for other diseases are in preparation:

#### DIPHThERIA.

##### A CONTAGIOUS AND INFECTIOUS DISEASE.

"All persons are forbidden to go into or out of these premises, or to carry into or out of them any material whereby diphtheria may be conveyed, except by permission of the Board of Health, under penalty of not less than five dollars (\$5.00), nor more than twenty-five dollars (\$25.00) for any violation of this act."—*Sec. 19, Chap. 132, Laws of 1883.*

The chairman will give to all who ask, printed instructions how to prevent diphtheria and all infectious diseases.

##### DIPHThERIA, EINE ANSTECKENDE KRANKHEIT.

"Es ist allen Personen verboten hier ein und auszugehen, oder Sachen ein und auszutragen wodurch diphtheria weiter verbreitet werden kann, ausgenommen mit Erlaubniss der Gesundheits-behörde, unter Strafe von nicht weniger wie fuenf dollars (\$5) und nicht mer wie fuenfundzwanzig dollars (\$25) für hebeittretung dises Gesetzes."—*Sec. 19, Kap. 132, der Gesetze von 1883.*

Der Vorsitzer wird allen welche darum anfragen, gedruckte instructionen geben, wie dephtheritis und alle ansteckende krankheiten zu verhusten sind.

##### DIPHThERIA, EN SMITSOM OG FARLIG SYGDOM.

"Hver og en er strengeligen forbudt til at gaa ind eller ud fra disse Pladse, eller bringe ind i eller ud derfra nogenslags Sager, hvoraf Diphtheria kan spredes, undtagen ved tilladelse fra Board of Health, under mulkt af ikke mindre end fem dollars (\$5), eller over fem og tyve dollars (\$25), for hver Overtrædelse af denne Akt."—*Sek. 19, Kap. 132, Lov af 1883.*

Formanden af Board of Health vil give til alle som ønsker, trykte instruktioner hvorledes Diphtheria og andre smitsomme Sygdomme kan forhindres.

.....Chairman Board of Health.

.....Town Clerk.



# PUBLIC HEALTH IN MINNESOTA.

OFFICIAL PUBLICATION OF THE STATE BOARD OF HEALTH  
AND VITAL STATISTICS,

PUBLISHED MONTHLY AT THE OFFICE OF THE BOARD, RED WING MINN.

CIRCULATION, 3,700 COPIES.—SUBSCRIPTIONS, FIFTY CENTS PER ANNUM.

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DECEMBER, 1890.

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## INFECTIOUS DISEASES REPORTED DURING THE MONTH OF NOVEMBER, 1890.

### DISEASES OF MEN.

Diphtheria.....	}	cases, 155
		deaths, 51
Scarlatina.....	}	cases, 13
		deaths, 4

### DISEASES OF ANIMALS.

Cases of glanders remaining isolated or not accounted for.....	12
Reported during the month.....	1
Killed.....	1
Released.....	0
Isolated.....	0

Remaining Dec. 1st, 1890, isolated or not accounted for..... 12

NOTE.—Most of these are cases exposed to possible infection, and isolated for further observation.

## MINNESOTA WEATHER SERVICE—REPORT, NOVEMBER, 1890.

IN CO-OPERATION WITH THE U. S. SIGNAL SERVICE.

Furnished by Corp. John Healy, Observer, Signal Service, in charge.

STATIONS.	ATMOSPHERIC PRESSURE.					TEMP. OF AIR.		Monthly Precipitation.	No. rainy days, .01 inch or more...	No. of cloudy days .....	No. of fair days.....	No. of clear days.....	No. of hail storms.....	No. of thunder storms..
	Mean reduced barometer...	EXTREME.				Monthly mean...	Monthly range...							
		Highest barometer.	Date.....	Lowest barometer.	Date.....									
Farmington.....						34.7	46	.50	1					
Grand Meadow.....						31.4	54	.34	3	6				
L. Winnebigoishish dam.....						30.0	51	.40	5	8	14	8		
Leech Lake dam.....						29.4	63	.41	4	12	3	15		
Mankato.....	30.10	30.60	21	29.64	4	36.8	53	.52	2	6	8	16		
Medford.....						33.6	63	.75	3					
Minneapolis.....						36.8	52	.39	2	7	8	10		
Moorhead.....	30.08	30.54	21	29.37	4	32.6	61	.31	2	9	8	13		
Montevideo.....						34.6	65	.43	2					
Morris.....	30.11	30.50	22	20.49	4	31.8	56	.50	3	5	6	19		
Northfield.....						34.2	58	.60	2	6	11	13		
Pine River dam.....						29.6	67	.34	3	16	4	10		
Pokegama Falls.....						29.3	66	.59	5					
Red Wing.....	30.08	30.52	22	29.62	5	37.1	49	.72	4	5	12	13		
Rolling Green.....						33.3	50	.30	3	4	9	17		
St. Charles.....						31.9	54	1.00	3					
St. Paul.....	30.07	30.51	22	29.59	5	36.5	50	.38	3	6	15	9		
St. Vincent.....	30.05	30.48	21	29.24	4	28.4	59	.19	1	8	9	13		
La Crosse, Wis.....	30.12	30.56	22	29.68	5	37.6	43	1.24	5	6	14	10		
Faribault.....						35.0	63	.25	3					
Crookston.....						30.8	56	.17	2					
Duluth.....	30.04	30.43	22	29.51	4	34.4	39	.91	9	12	12	6		
Mean.....	30.08	30.52		29.52		33.2	55	.51	3	8	10	12		

GENERAL REMARKS—The month was decidedly warmer than usual in all parts of the state, the departure from normal being 8 to 9 degrees in the west and northwest, to 4 degrees in the southern tier of counties.

The precipitation was deficient as follows: 0.41 inches at St. Vincent, 0.59 at Moorhead, 0.61 at La Crosse, 0.89 at Duluth, and 0.99 at St Paul.

At the end of the month 2 inches of snow was reported on the ground at several northern stations; while in the central and southern counties the ground was bare.

Central Office, Minneapolis, Minn.

December 14, 1890.

**D**ISTRIBUTION AND MORTALITY FROM SPECIFIED DISEASES IN MINNESOTA FOR THE MONTH OF NOVEMBER, 1890, REPORTED UP TO DECEMBER 20. Total deaths, 701—400 males, 301 females; 48.64% in Minneapolis and St. Paul 7.13% in centres over 15,000 population, 3.85% in centres of 5,000 to 15,000 population; 40.37% in the State outside centres of more than 5000 population.

*Ages at death*—under 1 year, 30.52%; 1 to 2 years, 5.1%; 2 to 3 years, 2.99% 3 to 4 years, 2.85%; 4 to 5 years, 1.71%; 5 to 10 years, 5.42%; 10 to 15 years, 2.85%; 15 to 20 years, 4.7%; 20 to 30 years, 8.41%; 30 to 40 years, 7.98%; 40 to 50 years, 5.7%; 50 to 60 years, 5.7%; 60 to 70 years, 6.7%; 70 to 80 years, 5.27%; over 80 years, 2.71%.

*Measles*—But 2 deaths, both in cities.

*Scarlatina*—6 deaths, in 6 localities, 6 counties, one in cities, 4 outside centres of more than 5000 population.

*Diphtheria*—57 deaths, in 22 localities, 17 counties, 52.63% in cities; 47.37% in balance of State. A decided reduction. Same month, 1888, 93 deaths; in November, 1889, 111.

*Croup*—22 deaths, in 11 localities and 11 counties; 68.18% occurred in cities 32.82% outside centres of more than 5,000 population. Same month, 1888, 24 deaths; in November, 1889, 34; mortality less than for the same month in last three years.

*Enteric (typhoid) fever*—39 deaths, in 18 localities, and 17 counties, 66.67% occurred in cities; 33.33% in balance of State. Little more than half the prevalence in the same month for 1888 and 1889.

*Diarrheal Diseases of Children*—22 deaths, in 6 localities and 6 counties, 90.91% in cities; 9.90% outside cities.

*Bronchitis*—14 deaths, in 8 localities and 8 counties, 61.43% in cities, and 38.57% in balance of State. A little more than one-half the prevalence in same month of 1888 and 1889. 12 deaths under 2 years of age.

*Pneumonia*—41 deaths, in 16 localities, 15 counties, 68.29% occurred in cities; 31.71% in balance of state, 22 deaths under 5 years. In November, 1888, 76 deaths from this cause, and 65 in November, 1889. Though larger than for last month the mortality is about 60% of that of the same month of 1888 and 1889.

*Tuberculosis*—72 deaths, of which 60 were pulmonary phthisis, 28 localities 27 counties; 72.22% occurred in cities; 28.78% in balance of State.

From the lung affection all but two of the dead were over 15 years of age. *Other tuberculosis* all but two were under three years. In November, 1888, 82 deaths from this cause; 97 in November 1889.

---

A MERICAN PUBLIC HEALTH ASSOCIATION. This body, under the presidency of the Secretary of the Michigan State Board of Health, Dr. Baker, met in Charleston, South Carolina, Dec. 15-17. No minutes of the meeting have been received. Dr. Phillips and the Secretary were appointed to represent the State Board. Dr. Hewitt was unable to leave the work of the office and Dr. E. J. Davis went as his substitute.

---

MINNESOTA METHODS WITH LEPROSY.—Dr. Davis read a paper by the Secretary, *Minnesota experience of leprosy since the first Norwegian immigration*, more than forty years ago, showing that the disease has not appeared in the offspring of lepers here to the fourth generations; that not a case is known of the spread of the disease by infection or contagion here, and that it has not occurred in any other nationality and seems to be on the decline among its victims who live here.

The policy of the State Board of Health, which has abundant authority to deal with leprosy as an infectious disease, is

to keep careful watch of all cases, insisting on no other isolation than that each have his own room, bed and dishes. This the lepers and their families make the rule. Judging by the longest, and most thorough investigation yet made in this country, there is no occasion for any other restrictions. The question is left open, however, and the oversight of the lepers is as strict as if we really feared the spread of the disease, and should there appear any occasion for stricter regulation it can be promptly ordered and immediately put into effect.

KOCH'S REMEDY is literally the leading topic of interest the world over, but we are no nearer the actual facts than last month. Samples of the preparation have been sent to London, Philadelphia and to other medical centres for trial. Meantime a crowd of medical men, with various motives, have gone from all parts of the country to Berlin, and we shall soon be flooded with offers of the treatment, and the rush will be of patients. Fatal results have already followed the use of the remedy in the hands of men trained by Koch himself, and the representative men who have had the largest experience with it in Berlin, are unwilling to call the most apparent success, up to the present time, other than "provisional cure," and all insist that the use of the fluid requires the most careful discrimination.

#### *INFECTIOUS DISEASES OF MEN.*

INFECTIOUS DISEASE POSTERS in English-German, English-Norwegian, English-Swede, for DIPHTHERIA, SCARLATINA and SMALL POX, are now ready for distribution. When writing for them specify the disease for which, and the language in which, you want them.

UNSEASONABLE WEATHER has had much to do with the increase in sickness and mortality. The Christmas gift most needed by our population, in a sanitary sense, is a heavy fall of snow to last till the middle of March.

THE NOTIFICATION OF INFECTIOUS DISEASES to the Chairmen of Township Boards, or the Health Officers of villages or cities, as the location of the case may be, is a very essential feature of Minnesota sanitary methods, and is therefore made obligatory upon physicians, all keepers of private houses, board-



ing houses, lodging houses, inn-keepers and hotel-keepers and upon all persons who know of a case of infectious disease, (see sections 20, 21, 23, of chapter 132, Laws 1883.) A copy of the blank furnished by the State Board, free of charge, will be found in this number of PUBLIC HEALTH IN MINNESOTA.

Our official correspondence, for November, has contained a considerable number of admissions by Chairmen of Township Boards that their first knowledge of certain outbreaks of infectious disease in their own towns, came from the Secretary of the State Board. The simple reason is that they have not insisted on the notification of all infectious diseases, within 24 hours as the law requires. They will discover that it is a mistake that physicians are unwilling to report. Often they do not know to whom the report is due, and a courteous note enclosing the blanks, and asking that all cases of infectious disease in your Township be reported to you, will secure it. Just so soon as physicians understand that notification divides the responsibility for infectious disease, and secures an official oversight with power to act, they will welcome the assistance, and the division of a serious duty.

**GRAPHIC CHARTS**—(ENTERIC FEVER No. 2,)—gives sex, social state, age, (in periods of ten years) and nativity. A steady decline in almost every item. The exceptions are in ages, those between thirty and forty being most marked.

**NURSES FOR THE SICK OF INFECTIOUS DISEASES.**—The call for them is increasing because of the increasing popular dread of infection. This is particularly so of diphtheria. The demand is very difficult to meet because there are very few trained nurses who are willing to go into the country where the need is greatest. How is the want to be supplied?

**DIPHThERIA IN FAIRFAX, RENVILLE Co.**—Under date of October 24, 1890, Dr. A. G. Stoddard complained to the Secretary that there was an epidemic of diphtheria in the locality of Fairfax, "which seems to be gradually spreading and becoming more malignant." "The Local Board of Health doing absolutely nothing because of the peculiarly mild form in which the first case appeared." Secretary telegraphed immediately to Health Officer to report by next mail, the facts. He replied: "Dr. Stoddard wants you to come up Monday." I went up Monday, 27th, and at noon met the Local Board, or rather two of the members, the other, L. MacBride, being sick with diphtheria,

as were his wife and three children. I found the Health Officer had made no effort to enforce isolation, though he admitted that Dr. Stoddard had warned him of the first case, and of subsequent ones. He gave as excuse for his neglect that no one believed the disease to be diphtheria, though he had two children who had already had it. It was very difficult to trace the first cases, which were finally found to have come to see Dr. Stoddard from Cairo Township, the Health Officer said two weeks ago, then three, then four, then five, then six, and finally, by careful inquiry, I traced them back fully six weeks. Two other cases followed in Cairo Township, in the Firlie family, neighbors of the first cases (named Smith). I sent for Mr. Grasman, Chairman of Cairo. He had never heard of the disease in these families. Dr. Stoddard states that he had isolated the families himself and that they had obeyed him. No more cases to date in Cairo. Mr. Grasman asked many questions and promised a close lookout for infectious diseases in the future. I found that the disease had been taken by the family of John Colman, to the adjoining town of Wellington. Origin not known; but they trade in Fairfax. The Chairman of the Wellington Board came to see me, (Mr. M. Schmechel,) with his associate, Mr. Stephen Lehman, who told the members of the Village and Township Boards there assembled, that some five years ago he went to a public funeral of a case of diphtheria in St. Peter, that the disease followed in his family, and he lost five children, getting no instructions what to do till he heard from the Secretary of the State Board of Health.

I visited the cases in town. All (eight in number) are convalescing. The exudation shows, slightly, but distinctly on several. One has marked paralysis of the muscles of deglutition. There can be no doubt of the disease. I suggested a gathering of leading citizens and their wives in the evening, and met, I should think, about forty, to whom I told the truth as to their village, and showed them that their safety lay in urging their Board of Health to take this matter in hand promptly and thoroughly on these lines, viz., to make a house to house inspection in the morning (pop. 500); to isolate all children with sore throats till it was evident just what their ailment was. To make the isolation of diphtheria *absolute*, till the disease has disappeared, and disinfection was completed. Told them of the real character of the virus, and its tenaciousness of life on clothing and the like, and that the greatest care did not always save from another outbreak. They listened very attentively and applauded heartily as I concluded. The following letter to the Board explains the orders, and concludes this chapter of carelessness. The indifference and even opposition of a community to an infectious disease, is no excuse on the part of Boards of Health, for neglect to do the duty required by law:

*Gentlemen:* I have examined the cases of diphtheria in your village, with Dr. Stoddard, and have no doubt as to their character. The disease is diphtheria, and may at any time assume a malignant form. My advice is, in view of the fact that the disease has been here at least two months, that you take steps to find out where it is, as the first measure of control. Select your physician and employ him to go with one of you, to every family and examine the children. In all cases where sore throats are found, ask that the children be kept at home till it can be known, surely, whether the disease is diphtheria or not. Keep a list of families which, from this examination, you may have rea-

son to fear may have the disease, and notify the school board who they are, forbidding the children to go to school, or to associate with other children, till your Board declare the family free from all suspicion of the disease. In case you are satisfied that diphtheria exists, enforce isolation till the end of the case, and then see to it that disinfection is carried out as described in the circular furnished you.

Yours,

CHAS. N. HEWITT, Secretary.

#### INTER-STATE CONTROL OF INFECTIOUS DISEASES.

DIPHTHERIA suspected to have been taken from an infected locality in Minnesota, to Montrose, Wisconsin. November 4, Dr. Reeve, Secretary of the State Board of Health, wrote as follows:

*"Dr. Hewitt, Secretary State Board of Health of Minnesota.*

"DEAR DOCTOR: I have, under date of November 2d, a letter from the Health Officer of town of Montrose, reporting that a family by the name of Elders, arrived there, a week ago, from Verndale, Minn., bringing with them a child which had sore throat. No physician saw this case, and I infer therefore that it was not reported to the Health Officer; but November 1st the mother, another child, and the mother's sister, in whose family they are staying, were all taken with diphtheria, 'which has the appearance of a malignant form.' Mrs. Elders states that there had been one fatal case of this disease in the town they left. I would be glad to know if you have reports of diphtheria in the locality referred to."

Dr. Hewitt, under date of November 5, referred Dr. Reeve's letter to Mr. J. L. Eddy, Chairman of the township of Aldrich, (in which is Verndale). He refers it to Dr. W. N. Morrell, Health Officer of Verndale, who replied Nov. 8:

"The enclosed letter was handed to me by Mr. Eddy, of this place, to answer. In regard to the family of Elder, I have this to say: The only cases of diphtheria that have occurred in our locality the past three months, were the cases of the Swede families at Red Eye, which I called your attention to on or about the 18th of last month, and which were about ten miles from the Elder's farm, and the case of Lucy Miller, which I reported to you at the same time. The first case (at Red Eye) is 16 miles from here, and the latter case occurred in the middle of the business part of our village, and was strictly under rigid quarantine. This one developed (as Dr. Rounds, the attending physician claims,) in a case of fever of a bilious type, and was reported to me on the morning of Oct. 16th, last, and as soon as the attending physician saw symptoms of the disease. My office is directly across the street from the building in which this case developed. Strict quarantine regulations were at once adopted and maintained for over two weeks. The case ended fatally on same evening, i.e. the 16th. The family of Elders lived in the country, some 16 miles from here, and were not in town until they came to the train, about Nov. 1st. Now this house in which this girl died, was under quarantine, and no one was allowed, to my certain knowledge, to enter it from the street or to enter the street from the building, and they could not have been exposed from this case." Upon the receipt of this letter, Dr. Hewitt wrote to the Secretary of the Wisconsin Board of Health:

"Your letter was referred to the Local Board of Health of the Township

from which the Elders came. Though we find the records of Diphtheria in that Township and the village of Verndale, we find none to which the Elders were exposed. Am obliged for your notice and should be glad to know where they did get the infection."

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#### HEALTH OF CHILDREN IN THE SCHOOLS.

DIPHTHERIA seems increasing in distribution and mortality. It is easily carried in the clothing, and persists in the discharges from the throat and mouth of children for weeks after they are apparently well. The duty of the school-teacher is very plain. When you know that the disease is in a family (which you may learn on inquiry of the Health Officer, or of the Townships, of the Chairman of the Board of Supervisors,) do not permit children from that family to attend school till the Local Board of Health has given a written permit. When Diphtheria is known to be in the district be on the lookout for sore throats among the children and urge their parents to keep them at home till the character of the disease is known, or the child is well. It is your duty to help the health authorities control this fatal disease, and that duty you owe, still more to the children committed to your care. The simple measures above suggested may, easily, be the means of saving many lives.

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DUST in the school-room is a ready way of poisoning the air which the children have to breathe. The air-space is almost always limited, the floor poorly constructed and usually worn, of a soft wood, of second quality lumber, unpainted, and not oiled. To sweep such a floor is to fill the air with dust, which settles on desks, seats, and all other available spots, ready for a new distribution when the children come. Such floors are never clean, and are as really foul and nuisances, as a floor, not deliberately made so, can be. What is the remedy? Easy and of great value. Saturate the floor after a thorough sweeping, with boiled linseed oil. Its cost is trifling, and so is the bother of applying it. Apply it Saturday morning and find it dried on Monday morning. How does it operate? By making the wood impervious to moisture it seals up the offensive matters it may already contain, and prevents the soaking in of any more. The oiling should be renewed once in two weeks, best boiled oil, and you will soon have a floor as hard as oak, easily cleaned and twice as easy to sweep. In this way you remove one of the most serious sources of foul air, not unlikely the most serious. Try it, and until you have done so, don't blame the children for the close stuffy air of the school-room.